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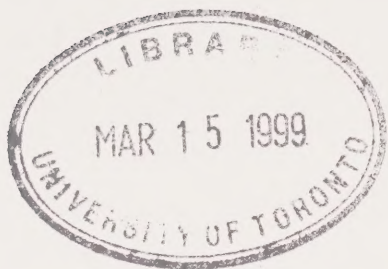
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**TRENDS IN FIRST NATIONS MORTALITY
1979-1993**

Our mission is to help the people of Canada
maintain and improve their health.

Health Canada



This publication was written by Laurel Lemchuk-Favel for Health Canada.

The opinions expressed in this report are those of the author and do not necessarily report the official view of Health Canada.

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EXECUTIVE SUMMARY

In demographic terms, the First Nations population differs from the Canadian population in three major characteristics: a higher percentage of youth, a higher growth rate, and poorer social conditions, particularly in employment, education, income, and housing conditions.

The crude mortality rate of First Nations declined by 21.4 percent over the period of this review. There was a slightly higher improvement in the male rate compared with the female rate. By age group, the largest decline in mortality rates was seen from birth to one year – followed by the 5 to 14, 30 to 34 and 40 to 44 age groups.

In comparison with Canadians, the greatest disparity in First Nations age-specific mortality rates was in the one to four age group, where the rate was more than four times the Canadian rate, the 15 to 39 age group, where the difference remained more than three times, and the 5 to 14 age group, where the difference was 2.5 times the Canadian rate.

Overall mortality in First Nations, as measured by an age-standardized rate that allows comparison with the Canadian mortality rate, shows that the improvements in First Nations mortality are mirrored by similar improvements in the Canadian rate. This means that the disparity in rates between the two populations in 1993 remained of the same magnitude as in 1979. The average annual change in age-standardized mortality rates shows that for all causes of death, the male First Nations rate improved about 0.42 percent a year, and the female First Nations rate improved about 0.24 percent a year.

In 1993 there were 46037 potential years of life lost in the First Nations population. The effect of the high infant mortality rates on potential years of life lost can be seen in the high number of potential years of life lost due to ill-defined conditions (of which Sudden Infant Death Syndrome, SIDS, a major component), congenital anomalies, and conditions in the perinatal period. First Nations infant mortality, however, has shown gains in comparison with the Canadian rate. In 1993 the First Nations rate of 10.9 deaths per 1000 births was 1.7 times the Canadian rate, compared with 2.5 times in 1979. Based on estimates of the number of live births of each sex, it appeared that male First Nations infants in 1979 were at increased risk for death compared with female infants, however, this risk has gradually disappeared and in 1993, the female infant rate exceeded the male rate for the first time.

Analysis of infant mortality by neonatal and post-neonatal rates has indicated that the greatest improvements in infant mortality in First Nations have been in the neonatal period (the first 28 days of life), generally considered as sensitive to health-care measures, rather than to socioeconomic factors. The First Nations neonatal rate dropped below the Canadian rate for the first time in 1993.

In First Nations, the post-neonatal rate, a recognized indicator of the impact of socioeconomic conditions on health in the first year of life, was 1.5 times higher than the neonatal rate in 1991–1993. Even though this rate has almost halved in the 15 years under review, it has remained on average three times the Canadian rate. As equity in the neonatal rate between First Nations and Canadian populations has been achieved, it is likely that the greatest gains in the First Nations infant mortality rate will occur through lowering the post-neonatal rate via improvements in the socioeconomic status and living conditions of First Nations people and their access to health services, and also through advancements in health care.

In First Nations infants, a higher percentage of deaths in 1989–1993 was related to SIDS, perinatal conditions and congenital anomalies compared with 1979–1983, although the mortality rates for all three of these causes have improved substantially. Deaths due to respiratory infections have decreased more than three-fold, and deaths due to infectious and parasitic diseases have declined more than five-fold.

For the total First Nations population, the top four causes of death have remained the same during the period 1979–1993: injury and poisoning, circulatory system diseases, neoplasms, and respiratory system diseases. In females, circulatory system diseases have recently replaced injury and poisoning as the leading cause of death.

The injury and poisoning rate has decreased significantly in the period under review. It is the greatest contributor to the gains in health status reported in this analysis, responsible for more 60 percent of all deaths averted in 1989–1993 when the 1989–1993 rates are compared with 1979–1983 rates. Not coincidentally, when the 1993 age-specific mortality rates are compared with the 1979 rates, the 25–44 year-old population was the age group in which the greatest number of deaths was averted, as injury and poisoning have historically been the leading causes of death for persons 1–44 years old. However, injury and poisoning still account for the majority in deaths of First Nations Populations, and in 1993, 55 percent or more than 26000 potential years of life were lost due to premature deaths in this category.

Injury and poisoning deaths are primarily due to motor vehicle accidents, suicides, and accidental poisoning/overdoses. Suicide and overdoses stand alone among the causes of injury and poisoning deaths in not showing substantial improvements over the 15-year period. Suicide ranks as one of the largest among all the disparities among First Nations and Canadians with respect to mortality. In the First Nations population, rates in children 1–14 years have averaged 4 deaths per 100 000 population in 1989–1993 compared with a zero rate in the same age group of the Canadian population. The female First Nations suicide rate for 15–24 year-olds was almost eight times the Canadian rate in this period, with the male rate showing a greater than five-fold difference. It is not until we look at the over 65 year-old population, that the First Nations suicide rate drops below the Canadian rate.

As First Nations people age, diseases of the circulatory system, neoplasms, and endocrine/immune system disorders assume increasing importance as causes of mortality. The incidence of cancer in women and the young age at which deaths often occur has meant that this disease is responsible for the third highest potential years of life lost for First Nations females.

The only major category of disease where the First Nations mortality rate is increasing is Neoplasms, and it also is the only major category where the age-standardized First Nations rate has not equalled or surpassed the Canadian rate. Although improvements have been seen in the other leading causes of death, including injury and poisoning, and diseases of the circulatory, respiratory, and digestive systems, these rates remain substantially above Canadian rates.

The trends revealed in this report provide a clear direction to First Nations people, policy makers and health-care professionals when attempting to improve First Nations' health status. Suicide rates, the bellwether of community well-being, remain high and send a powerful signal about the devastating effects of poor living conditions and lack of economic opportunity in First Nations communities, and the limitations of Canadian health care in addressing health needs. The benchmark of Canadian health status has not yet been reached and this highlights the reality that improvements to date are only signposts in the journey to the betterment of First Nations' physical, mental and spiritual well-being.

Highlights

- The death rate among First Nations people fell by 21 percent between 1979 and 1993. The largest improvement was in infant mortality (deaths under one year of age).
- Because death rates have fallen in the total Canadian population as well, the gap between the First Nations and Canadian populations has persisted for most health indicators.
- The infant mortality rate among First Nations infants has decreased appreciably, but is still 1.7 times the national average. However, this gap has narrowed since 1979, when it was 2.5 times the average. Most of the improvement in infant mortality is due to lower death rates in the first 28 days of life; this is likely to reflect improvements in health care. In contrast, deaths of First Nations infants between 28 days and one year of life remain triple the national average. Deaths at this age are frequently related to poor socioeconomic conditions.
- The top four causes of death for First Nations people have remained the same since 1979: injury and poisoning, diseases of the circulatory system, neoplasms (cancers), and diseases of the respiratory system. Injury and poisoning remains the leading cause of death among First Nations men, while diseases of the circulatory system are the leading cause for women.
- The death rate from injury and poisoning has decreased significantly over the 1979–1993 period; this improvement is the greatest contributor to the gains in health status reported in this analysis. Most deaths from injury and poisoning are due to motor vehicle accidents, suicides, and accidental drug overdoses.
- One of the largest disparities between First Nations and Canadian health indicators is in suicide rates. The gap is especially wide at age 15–24, where rates among First Nations people are from 5 to 8 times the national average.

- Death rates from diseases of the circulatory, respiratory, and digestive systems remain above the Canadian average, although they have generally decreased since 1979.
- Neoplasms (cancers) are the only major category of disease where death rates for First Nations people have increased over time. This is also the only category where rates for First Nations people are below the national average.

1.0 INTRODUCTION

The purpose of this report is to examine patterns of mortality First Nations people of Canada through the mortality database maintained by the Medical Services Branch of Health Canada. The years covered by this analysis span 1979 to 1993. The start of this period is somewhat arbitrary, as it is the earliest year where a detailed national database of First Nations mortality information on a national level is available. This 15-year period has seen major changes in the Canadian health system that have had an impact on the health status of all Canadians. These changes include organizational restructuring, technological advances, increasing awareness of lifestyle issues in health status, and a recognition of the importance of environment and socioeconomic status in improved well-being. In First Nations communities there have been improvements in health-service delivery, institution of preventative strategies to promote improved health and well-being, and a devolution of administrative control of health services.

Information in this report is presented through figures and tables for the topics:

- Mortality – crude, age-specific and age-standardized
- Infant mortality
- Major causes of death (including intentional and non-intentional injury)
- Leading causes of potential years of life lost, and
- Contributions to improvements in mortality rates.

The variables of age, gender, and to a lesser extent, geographic location, have been investigated for their relationships to mortality trends. All regions of Canada, with the exception of the Northwest Territories, are represented in the data. With the transfer of responsibility of health services to the Government of the Northwest Territories in 1988, the Medical Services Branch no longer collects statistical information on this territory's Aboriginal peoples.

Some mortality rates for earlier years have been amended as a result of corrections made to population figures, or newer, more complete data. Therefore, some of the rates given in this report may be different from rates for the same years given in previously published data.

1.1 Definition of First Nations and Canadians

For purposes of this report, the term First Nations population refers to those persons who are registered as Indians under the terms of the *Indian Act* and whose names appear in the Indian Register maintained by the Department of Indian Affairs and Northern Development.

The term Aboriginal refers to all indigenous persons of Canada, specifically those of North American Indian, Inuit or Métis ancestry, including those listed in the Indian Register.

The Canadian population used in mortality and other statistics is inclusive of the First Nations population.

2.0 LIMITATIONS OF THE DATA

The information residing in the Medical Services Branch database is obtained from MSB regional offices and from the Department of Indian Affairs and Northern Development. Both sources have limitations in their data collection. These limitations are in coverage of data and accuracy of population data and are described below. As the limitations have not been consistent throughout the 15-year period under review, they have an impact on the validity of trend analysis.

As regions differ in the populations included in the database and the method used to collect data, regional comparisons that look at mortality differences for discrete time intervals should be viewed with caution. Regional data have been presented, as they are of obvious use to regional policy development of health services. This report has included comparisons that present *trends* of mortality data among regions over defined time periods.

2.1 Collection and Coverage of the data

Mortality and birth data provided by the MSB regional offices have been obtained by a variety of different methods, ranging from the use of provincial databases to reports from field staff.

Field Staff

Field staff collect data in the Atlantic (New Brunswick, Newfoundland, Nova Scotia and Prince Edward Island), Québec and Ontario regions, and therefore data are available only for those First Nations people living on-reserve.

Provincial/Territorial Databases

The Manitoba, Saskatchewan, Alberta, Pacific (British Columbia) and Yukon regions report data obtained from the respective provincial and territorial databases. In this case, the statistics cover First Nations people both on- and off-reserve. Because regions have different methods of data collection and identification of First Nations people in the provincial/territorial databases, the accuracy with which First Nations people can be identified from varies, with the result that this information is more complete in some regions than in others.

More specific information on coverage is given in Table 1.1.

2.2 Calculations of Mortality Rates

The crude mortality rate is defined as the number of deaths during a year, expressed as either the number of deaths per 1000 population or per 100 000 population. As described above, the number of deaths is obtained from data collected by the Medical Services Branch of Health Canada. The denominator in this rate is the corresponding population from which the mortality data was collected. In this case, population data was obtained from the Indian Register of the Department of Indian Affairs and Northern Development, which was adjusted to reflect the Medical Services Branch coverage of death and birth data (Table 1.1).

The Indian Register is known to suffer from three flaws: (1) counting of some Bill C-31 registrants (see section 2.3 below) as births (not of concern to this analysis as data on births is obtained from the Medical Services Branch); (2) late reporting of births and deaths, and (3) missed reporting of births and deaths. Birth to teenage years and years over 65 are most affected by these errors. A fourth category of error is the incorrect categorization of the residency of First Nations persons (on- or off-reserve).

Infant mortality rates are based on the total number of live births recorded by the Medical Services Branch. For the years under review this information was not collected by sex. Therefore, in sex-specific rate analyses, the number of male and female live births used in the denominator are estimates based on the total number of live births, and the proportion of males and females in the population.

2.3 Bill C-31 Registrants

A limitation that must be considered in the interpretation of trends is the recent inclusion in the MSB database of a large number of First Nations people who obtained their Registered Indian status as a result of an amendment to the *Indian Act* in 1985. The federal Bill C-31 was the legislative vehicle for this amendment. These new registrants, the majority of whom live off-reserve, have been added to the Indian Registry since 1985. Although there is no evidence suggestive of differences in health status between on-reserve and off-reserve populations, the addition of a significant number of First Nations people, previously un-surveyed, must be noted.

Table 1.1
Mortality Data – Source and Method of Collection
Medical Services Branch

Atlantic and Ontario Regions

Collection:

Data collected by health workers in individual First Nations communities

Coverage:

- ◆ on-reserve First Nations people
- ◆ off-reserve First Nations people are excluded
- ◆ no data available for Labrador and Conne River, Newfoundland

Québec Region

Collection:

Data collected by health workers in individual First Nations communities

Coverage:

- ◆ data collected for First Nations living in 22 of Québec's 56 First Nations communities. Communities that receive their health services primarily from provincial sources and communities covered under the James Bay and Northern Québec Agreement do not provide data to Medical Services Branch
- ◆ off-reserve First Nations are excluded

Manitoba, Saskatchewan, Alberta and Yukon Regions

Collection:

Data obtained from provincial/territorial databases

Coverage:

- ◆ data collected for on- and off-reserve First Nations people

Pacific Region

Collection:

Data obtained from provincial database

Coverage:

- ◆ data collected for on- and off-reserve First Nation people
- ◆ data not available for the years 1985 and 1986

2.4 Accuracy of Reporting

The data are subject to the degree of accuracy of reporting in both their methods of collection and their coverage. Issues that may affect accuracy include:

1. When compiling mortality statistics, field nursing staff may not have access to the cause of the death as listed by the physician on the death certificate, and therefore may not provide the same cause of death.
2. The immediate cause of death listed on the death certificate may not be the underlying cause.
3. As with any death in Canada, there is some possibility that the code indicating cause of death on the death certificate is inaccurate, due to clerical error or misdiagnosis.
4. Errors may occur in the extraction of First Nations data from provincial/territorial databases by record linkage. This technique looks for agreement between First Nations demographic information and provincial data for a number of variables (name, date of birth, geographic location, etc.) and incorporates the probability of a correct link between these data sets if a number of matches are made. The probability basis of this method creates opportunity for errors in linkage to occur.
5. Changes in the method of data collection or coverage during the period studied is a limiting factor in trend analysis. The Pacific region used a manual record linkage technique for 1979–1984 and a computerized record linkage since 1987. Data are not available for 1985 and 1986. In the Québec region, the communities included in the James Bay Agreement gradually ceased to provide data to the Medical Services Branch. Communities subject to this agreement do not provide data to MSB. Other Québec First Nations communities that have implemented Health Transfer Agreements may or may not provide data.

The Medical Services Branch has performed numerous edit checks to check for errors in data entry and coding.

2.5 Small Populations

In some of the data categories, particularly regional data, the calculation of an annual mortality rate would involve small absolute numbers. Although this information is valid, it can result in a widely fluctuating rate from one year to the next, resulting in difficulties in interpreting or identifying trends. This problem has been minimized in two ways. In data tables, three or five-year average rates are used, rather than annual rates, in situations where the numbers are low. This eliminates some of the year-to-year fluctuation, as the rates are based on a larger sample.

The three-year moving average is used in the graphic depiction of trends. In this presentation, the average rate for successive three-year periods is determined. For example, the 1979–1981 average is determined, followed by the 1980–1982 average, the 1981–1983 average, and so forth. The moving average tends to smooth out the year-to-year variations and highlight trends in the mortality rate.

3.0 OVERVIEW OF THE FIRST NATIONS POPULATION

Highlights

- First Nations people, as defined by the Indian Register, make up 1.9 percent of the Canadian population.
- About 60 percent of First Nations people are reported to live on reserves or crown land, while the remaining 40 percent live off-reserve.
- As compared to the general population of Canada, the First Nations population has a high proportion of children, and a low proportion of elderly people.
- About 64 percent of First Nations communities are accessible by road and are located less than 90 kilometres from physician services. About 14 percent have road access but are more than 90 kilometres from a physician, while the remaining 22 percent are not accessible year-round by road.
- The socioeconomic conditions of First Nations people have improved since 1986, but are still well below average: unemployment rates are higher, family income is lower, and crowded housing is much more common.

3.1 Overall Population Statistics

The population of First Nations people in Canada, as defined by the Indian Register on December 31, 1993, was 553559, of which 58.7 percent were reported to live on reserves or settlements on Crown land. This First Nations population, both on- and off-reserve, constituted 1.9 percent of the total Canadian population in 1993. This is an increase from 1.3 percent of the total population in 1981.¹ The growth rate of First Nations is due both to the addition of more than 96000 Bill C-31 registrants by 1993, and a higher birth rate. Figure 3.1 shows the birth rates of First Nations and Canadians from 1979 to 1993. Whereas the Canadian rate is gradually falling (at 13.4 births per 1000 population in 1993), the First Nations rate has exceeded 25 births per 1000 population for all the years depicted. It has showed a small decline from a high of 30.1 births per 1000 population in 1987 to 27.3 in 1993 (Table 3.1).

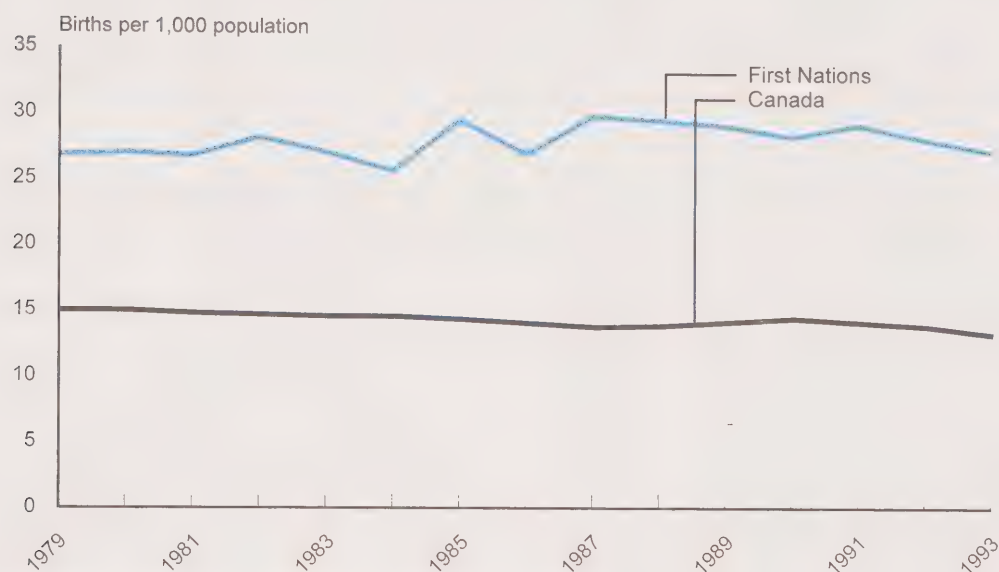
The high birth rate, along with a continuously lower life expectancy of First Nations, has ensured that this population is young compared with the general Canadian population. The profile of the First Nations population has changed from 1979 to 1993, which can be attributed both to gains in life expectancy and the addition of Bill C-31 registrants. Figure 3.2 illustrates the change in the age distribution of the First Nations population served by the Medical Services Branch for the years 1979 to 1993. The main changes are a reduction in the percentage of population in age 5 to 24, coupled with an increase in the percentage of the population ages 25 to 44 years.

Table 3.2 provides First Nations and Canadian life expectancy at birth data for the period 1971–1991. Between 1980 and 1990, life expectancy of the First Nations population in the Indian Register population increased by six years for both sexes.² In 1992 the life expectancy of female First Nations people was estimated at 74.9 years, or six years less than the female Canadian population. For males in 1992, First Nations life expectancy was estimated at 67.8 years, or 6.8 years less than the Canadian population.³

Figure 3.1

Birth Rates

First Nations and Canadian Populations, 1979-1993



Sources: Medical Services Branch in-house statistics and Statistics Canada

Table 3.1

Number of Births and Birth Rates

First Nations and Canadian Populations, 1979-1993

Year	Canadian Birth Rate*	Number of Canadian Births	First Nations Birth Rate*	Number of First Nations Births
1979	15.1	366,064	27.0	7,248
1980	15.1	370,709	27.2	7,504
1981	14.9	371,346	27.0	7,632
1982	14.8	373,082	28.4	8,090
1983	14.7	373,689	27.3	8,029
1984	14.7	377,031	25.9	7,726
1985	14.5	375,727	29.8	7,188
1986	14.2	372,913	27.2	6,817
1987	13.9	369,742	30.1	9,906
1988	14.0	376,795	29.8	10,510
1989	14.3	392,661	29.4	10,862
1990	14.6	405,486	28.6	11,359
1991	14.3	402,528	29.5	11,707
1992	14.0	398,642	28.4	12,077
1993	13.4	388,394	27.5	12,223

* Number of births per 1,000 population

Sources: Medical Services Branch in-house statistics and Statistics Canada

Table 3.2
Life Expectancy at Birth*
First Nations and Canadian Populations

	First Nations Female	First Nations Male	Canadian Female	Canadian Male
1971			76.6	69.9
1975	65.9	59.2		
1976			77.8	70.5
1980	68.0	60.9		
1981			79.2	72.1
1985	71.0	63.9		
1986			80.0	73.3
1990	74.0	66.9		
1991			81.0	74.6

*For a definition of life expectancy, see glossary.

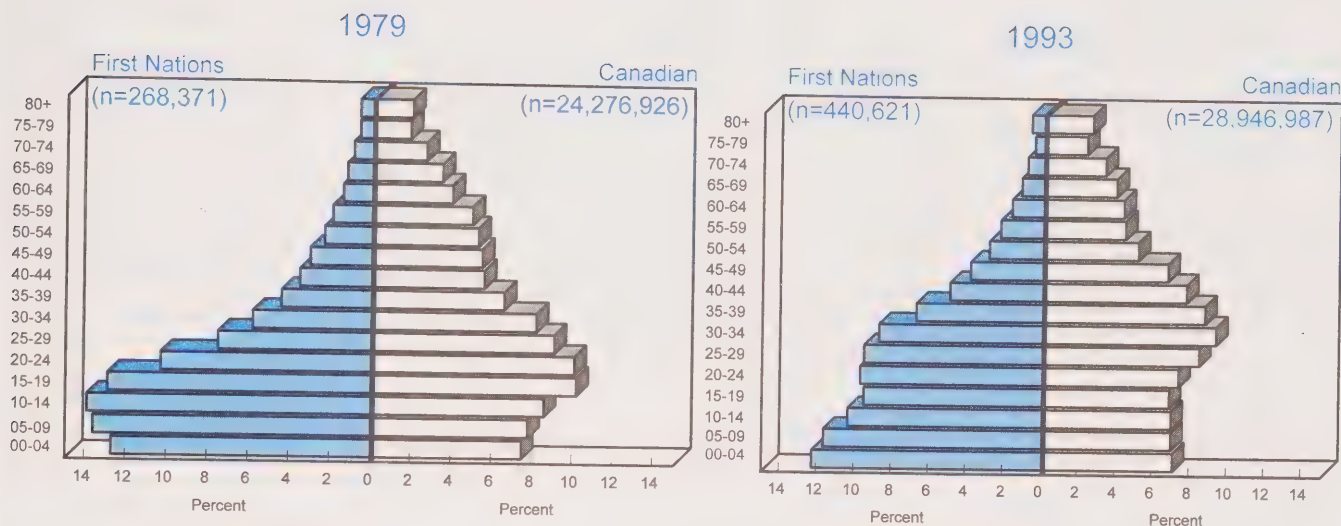
Source: Statistics Canada and the Department of Indian Affairs and Northern Development

Figure 3.2 compares the age distribution of the First Nations and Canadian populations in 1979 and 1993. The Canadian age distribution is a convex shape, showing a bulge where the majority of the population is concentrated. This bulge has moved from the 15 to 34 age group in 1979 to the 25 to 49 age group in 1993. The First Nations age structure by comparison has a pyramid shape, illustrating the high proportion of youth in the population, although it, too, has changed over this period.⁴ Such differences in age structure are important, as overall mortality rates are not comparable unless the rates are standardized to the same age structure to reflect adjustments for differing percentages of persons in each age group. In practical terms, this means standardizing the First Nations mortality rate using the age structure of the Canadian population. In this report the 1991 Canadian Census has been used as the standard Canadian comparator population.

Figure 3.2

Population Distribution 1979 and 1993

First Nations Population Included in Medical Services Branch Data and Total Canadian Population



See Appendix 1 for the table summaries of the population distribution
 The population used for the First Nations age-distribution is described in Table 1.1
 Sources: Medical Services Branch in-house statistics and Statistics Canada

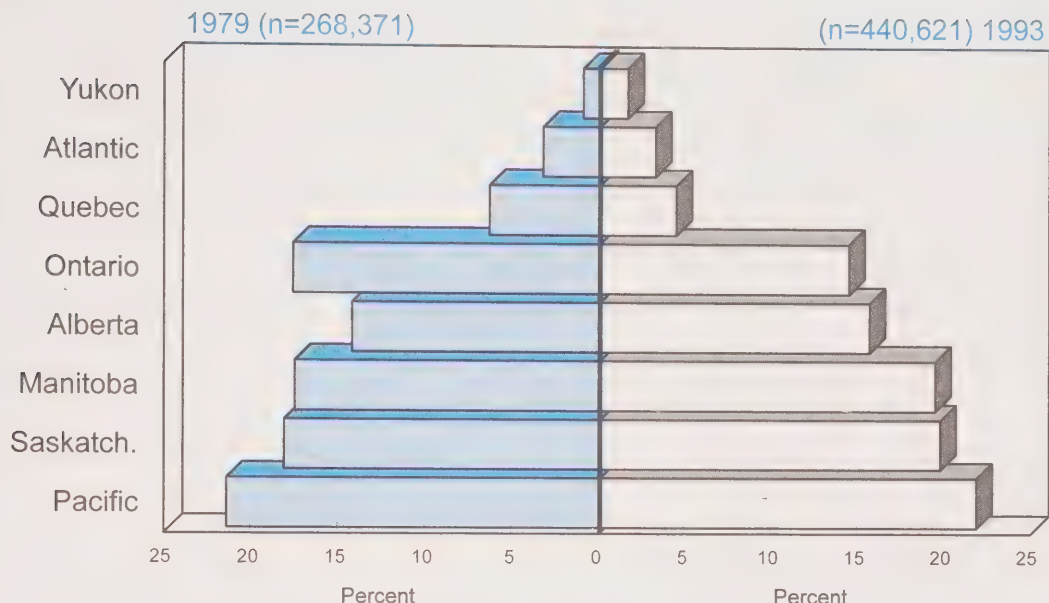
3.2 Population Distribution by Region

Figure 3.3 compares the regional distribution of First Nations included in the Medical Services Branch database for 1979 and 1993. Aside from population growth overall (from 268 371 to 440 621), the figure shows that in 1993, Ontario, Québec and Atlantic regions had a lower proportion of First Nations people compared with 1979. The population in the database for these regions includes only those persons living on-reserve, whereas the regions to the west include those living both on-and off-reserve. As Bill C-31 growth primarily affected the off-reserve population, these western regions experienced proportionally higher growth.

The 633 First Nations communities in Canada have been classified by the Medical Services Branch to account for varying geographic and demographic circumstances. The majority of communities (63.7 percent) are classed as non-isolated as they are accessible by road and less than 90 kilometres from physician services. Semi-isolated communities that also have road access and where physician services are greater than 90 kilometres away, account for a further 14.4 percent of communities. Communities classed as isolated have scheduled flights, good telephone services, but no road access (19 percent). Remote isolated communities have no scheduled flights, minimal telephone or radio service and no road access (3 percent). Table 3.3 provides a breakdown of the numbers of community types by region for all First Nations communities in Canada, including those that do not submit data to the Medical Services Branch (see Table 1.1).

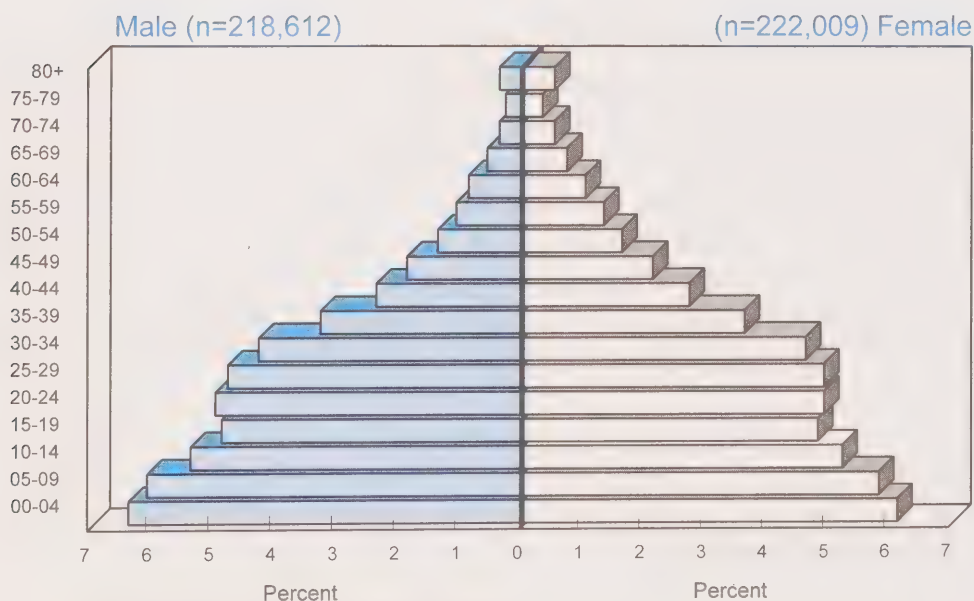
Remote communities are located in the Pacific, Alberta, Saskatchewan, Manitoba and Ontario regions. The majority of isolated communities are located in Québec (25 percent), Ontario (22.7 percent) and Manitoba (20 percent). Semi-isolated communities are distributed among the regions, except for the Atlantic region, which has none.

Figure 3.3
Population Distribution by Region
First Nations Population Included in Medical Services Branch Data
1979 and 1993



See Appendix 2 for the table summary of the population distribution
The population used for the First Nations distribution is described in Table 1.1
Source: Medical Services Branch in-house statistics

Figure 3.4
Population Distribution by Gender
First Nations Population Included in Medical Services Branch Data, 1993



See Appendix 3 for the table summary of population distribution
The population used for the First Nations age-distribution is described in Table 1.1
Source: Medical Services Branch in-house statistics

Table 3.3
Classification of First Nations Communities

	Non-isolated	Semi-isolated	Isolated	Remote	Total
Pacific	50	28	17	5	200
Alberta	31	19	4	4	58
Saskatchewan	61	10	8	2	81
Manitoba	27	10	24	1	62
Ontario	77	12	27	7	123
Quebec	18	4	30	0	52
Atlantic	34	0	6	0	40
Yukon	5	8	4	0	17
	403	91	19	19	633

3.3 Population Distribution by Gender

Figure 3.4 illustrates the percentage population distribution of First Nation people by gender. The male and female population profiles are similar, except that proportionally there are slightly more males under 25 years of age, and slightly more females in the older age categories.

3.4 Social Conditions of First Nations

There are many individual factors affecting health status and mortality which are well recognized. The social component to health, whether it be lifestyle or socioeconomic status is known to be one of the major influences on physical, spiritual and mental wellbeing. The main factors which influence socioeconomic status are income, occupation and education. In particular, housing and infrastructure are inferior in First Nations communities. A variety of health problems are associated with poor housing conditions, lack of central heating, inadequate water and sanitation, and crowding that are often seen in these communities. These health problems include infectious diseases, non-infectious respiratory diseases, chronic conditions, and mental health conditions related to interpersonal conflicts.⁵

TRENDS IN FIRST NATIONS MORTALITY 1979-1993

ERRATA

Please note that this table replaces the one on page 14:

Table 3.3
Classification of First Nations Communities

	Non-isolated	Semi-isolated	Isolated	Remote	Total
Pacific	150	28	17	5	200
Alberta	31	19	4	4	58
Saskatchewan	61	10	8	2	81
Manitoba	27	10	24	1	62
Ontario	77	12	27	7	123
Quebec	18	4	30	0	52
Atlantic	34	0	6	0	40
Yukon	5	8	4	0	17
	403	91	120	19	633

The 1991 census has provided the following information on First Nations social conditions. Information from the 1986 census is provided for comparison and to give an indication of First Nations changing socioeconomic status⁶:

- The unemployment rate of First Nations people (aged 15 or more years) was 27.7 percent compared to the Canadian population rate of 10.3 percent. Compared to 1986, the First Nations workforce participation rate increased by 5 percent, resulting in a similar 5 percent decrease in the unemployment rate.
- The average First Nations family income (in constant 1986 dollars) was \$10,141 (up from \$9,000 in 1986), but still almost half the Canadian mean of \$19,188.
- Forty-two percent of the First Nations population relied on social assistance. This was up from 37.4 percent in 1986.
- In education, 27.9 percent of First Nations people had less than a grade 9 education in 1991, a proportion which is double the Canadian percentage. However, there were almost 10 percent more without a grade 9 education in 1986.
- The percentage of First Nations dwellings having more than one person per room (an indicator of crowding) was 11.4 percent, eight times the Canadian rate. This is a decrease from 20.3 percent in 1986.

Recent data show major improvements in housing conditions. In 1994/95, 6 percent of First Nations dwellings lacked an adequate water supply, and 12 percent were without adequate sewage disposal, compared to 1986 when over 25 percent were without adequate water and 33 percent without adequate sewage disposal.⁷

Also in 1994/95, 73 percent of First Nations students on reserve were enrolled in grade 12 compared to 42.2 percent in 1986, and post secondary attendance was 26,819 compared to 13,196 in 1986.⁸

4.0 MORTALITY RATES

Highlights

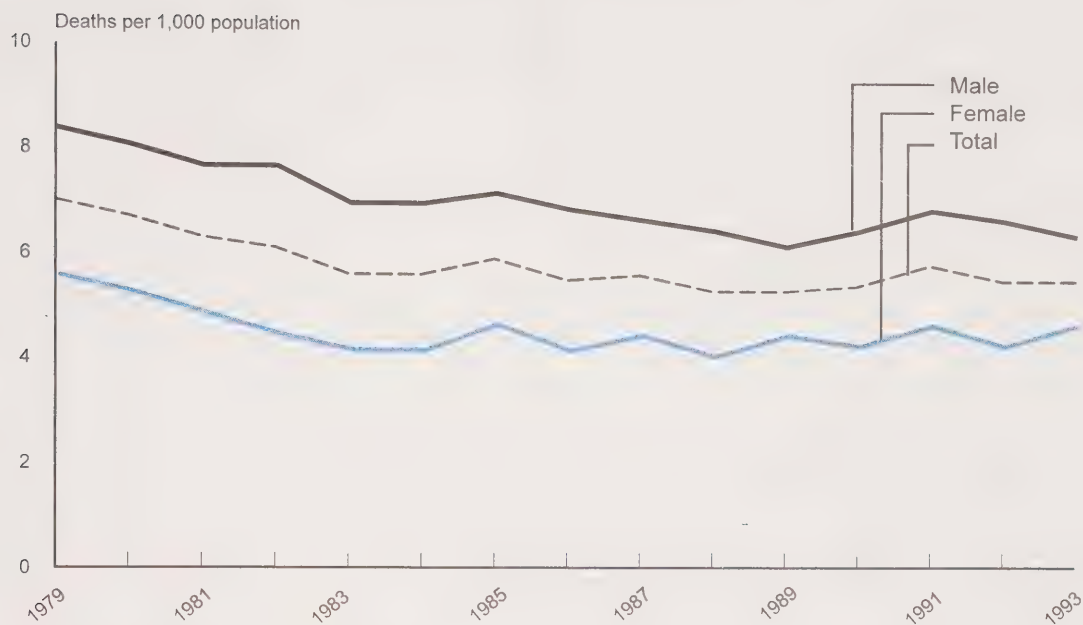
- From 1979 to 1993, crude death rates among First Nations people decreased by 21 percent. Much of this gain was achieved during the early 1980s.
- Death rates decreased more substantially among First Nations men than among women. The main reason for this was a decrease in the number of deaths from injury and poisoning.
- Death rates are higher among First Nations men than among women at most ages; the disparity is greatest among people under age 30.
- Death rates among First Nations people are higher than the Canadian average up to age 39; at older ages, the gap is less pronounced.
- Although death rates among First Nations people have decreased, the Canadian population as a whole has experienced a similar downward trend. Because of this, the gap in overall death rates between the First Nations and Canadian populations has persisted.

4.1 Crude Mortality Rate

The crude mortality rate for the First Nations population both by gender and overall is depicted in Figure 4.1. Over the period 1979–1993, the overall mortality rate declined by 21.4 percent, from 7.0 deaths per 1000 to 5.5 deaths per 1000 (Table 4.1). This gain in mortality was achieved during the early 1980s, as the last 10 years have remained fairly constant, averaging 5.5 deaths per 1000 population.

A 23.8 percent improvement in the male First Nations death rate compared with 16.1 percent for females from 1979–1993 has meant that the gap in mortality rates between the sexes is slowly closing. For 1979–1986, the male mortality rate averaged 7.5 deaths per 1000 population, 2.8 deaths per 1000 population higher than the female average rate of 4.7. This disparity dropped to 2.1 deaths per 1000 population for 1987–1993 (male average 6.5 deaths per 1000 population; female average 4.4 deaths per 1000 population). As will be seen in the following analysis of mortality by cause, these mortality rate decreases are in large part due to fewer deaths from injury and poisoning.

Figure 4.1
Mortality Rates by Gender and Overall
First Nations, 1979-1993



Source: Medical Services Branch in-house statistics

Table 4.1
Mortality and Mortality Rates by Gender and Overall
First Nations, 1979-1993

Year	Female		Male		Total	
	Number	Deaths per 1,000 pop'n	Number	Deaths per 1,000 pop'n	Number	Deaths per 1,000 pop'n
1979	737	5.6	1,150	8.4	1,887	7.0
1980	713	5.3	1,138	8.1	1,851	6.7
1981	680	4.9	1,098	7.7	1,778	6.3
1982	634	4.5	1,106	7.7	1,740	6.1
1983	615	4.2	1,043	7.0	1,658	5.6
1984	620	4.2	1,055	7.0	1,675	5.6
1985	568	4.7	864	7.2	1,432	5.9
1986	529	4.2	851	6.9	1,380	5.5
1987	736	4.5	1,092	6.7	1,828	5.6
1988	729	4.1	1,141	6.5	1,870	5.3
1989	831	4.5	1,135	6.2	1,966	5.3
1990	854	4.3	1,281	6.5	2,135	5.4
1991	947	4.7	1,349	6.9	2,296	5.8
1992	913	4.3	1,423	6.7	2,336	5.5
1993	1,039	4.7	1,392	6.4	2,431	5.5
Change 1979-93		-0.9		-2.0		-1.5

Source: Medical Services Branch in-house statistics

4.2 Age-specific Mortality Rates

Figure 4.2 provides a comparison of the age-specific death rates of First Nations for 1979–1983 and 1989–1993. Five-year average rates are given for comparison purposes to reduce yearly variations resulting from the small numbers involved in some of the age categories. As expected, the decline in crude mortality rate seen in the previous time series graph is paralleled in the five-year age groupings depicted. From birth to 59 years of age, mortality rates in the various age categories have declined between 11 percent and 45 percent with the result that more people are living into the senior years. The largest decline in mortality rate in these two time periods was 45.1 percent in the birth to one-year age group and will be discussed in the section on infant mortality below. The next largest improvement in mortality rates in 1989–1993 was 38 percent in the 5 to 14 years, followed by 36 percent in the 30 to 34 and 40 to 44 age categories. A small increase in mortality rates has been posted after age 60.

Further gender-specific analyses of the differences in mortality rate using these five-year age groups, is given in Figure 4.3 for the years 1989–1993. Male mortality exceeds female mortality for all age groups, except for the 10 to 14 group, where they are almost identical. The disparity between death rates of males and females is the greatest in the years from 15 to 29, with the male rate in the 20 to 24 category almost three times the female rate. The magnitude of this inequality steadily decreases over succeeding categories past 29 years of age.

Figure 4.4 provides a comparison of age-specific death rates for First Nations and Canadian populations for the period 1989–1993. The greatest disparity is seen in the 1 to 4 age category, as the First Nations death rate has exceeded the Canadian rate by more than four times. Although this gap decreased slightly for the years 5 to 14 (2.5 times difference), for the years 15–39 the difference remains more than three-fold. Past age 39, this gap has closed until in the 80–plus age group, the Canadian rate has exceeded that of First Nations. The mortality rate differences between these two populations in the early to mid-adult years has improved modestly since the late 1960s, when the First Nations mortality rate for ages 20 to 39 was reported to be three to five-fold the comparable national rate⁹.

Figure 4.2
Age-specific Mortality Rates, First Nations 1979-1983 and 1989-1993

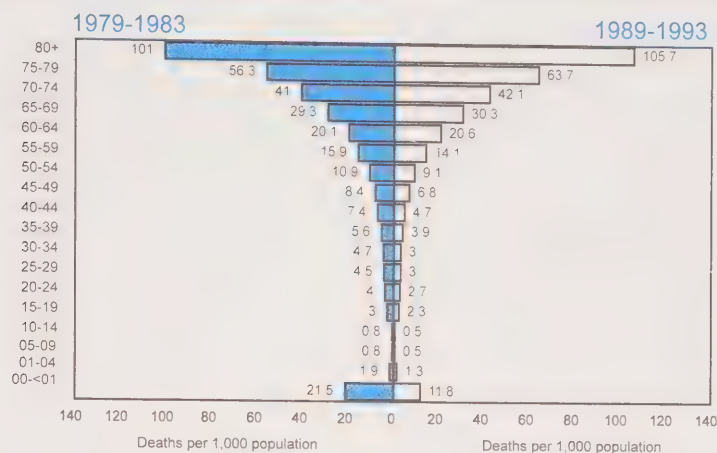


Figure 4.3
Age-specific Mortality Rates, First Nations by Gender 1989-1993

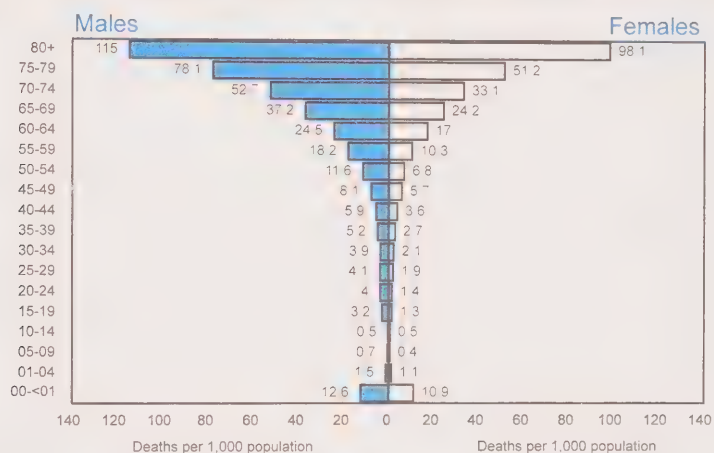
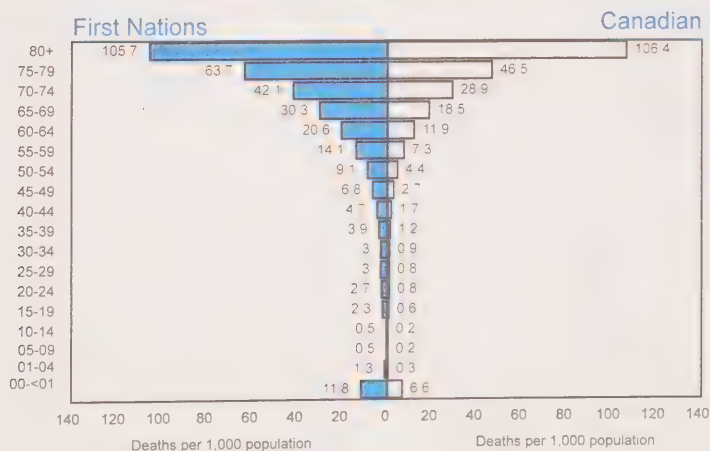


Figure 4.4
Age-specific Mortality Rates, First Nations and Canadian Populations 1989-1993



Sources: Medical Services Branch in-house statistics and Statistics Canada

4.3 Age-standardized Mortality Rates

As mentioned previously, age-standardized mortality rates must be used when comparing First Nations overall mortality with the Canadian mortality rate, as these two groups have markedly different age structures. In 1993, the mortality rate of First Nations, age-standardized to the 1991 Canadian population, was 10.8 deaths per 1000 population, 1.6 times the Canadian rate of 6.9 (Table 4.2). In 1979 the difference was 1.5 times. Figure 4.5 provides a visual comparison of First Nations and Canadian age-standardized rates for 1979–1993. The top diagram refers to total mortality. Where the Canadian rate is steadily declining, the First Nations rate has fluctuated yearly, making interpretations of trends difficult. However, it is clear that the gap in mortality is not closing.

A similar analysis can be applied to the sex-specific mortality rate comparisons shown in Figure 4.5. In 1993 the male First Nations mortality rate was 11.5 deaths per 1000, compared with 7.4 in the Canadian population. The female First Nations and Canadian rates were 10.0 and 6.3 respectively.

4.4 Regional Profile

Figure 4.6 provides an overview of crude and age-standardized mortality rates in each of the eight Medical Services Branch regions. As covered in the Limitations of the Data section above, the regions differ in the populations surveyed. Therefore, reasons for differences among regional mortality trends may be hard to elucidate. Moving three-year average rates have been plotted to reduce the fluctuation of annual rates caused by small numbers of deaths in individual regions. Appendix 4 provides three-year crude and age-standardized rates by region for 1979–1993.

In general, Manitoba, Saskatchewan, Alberta and Yukon have experienced consistent downward tendencies in their mortality rates, while the Atlantic, Québec, Ontario, and Pacific regions experienced more variability or less convincing evidence of a decreasing trend in both age-standardized and crude mortality rates. In particular, the recent increase in mortality rates in the Québec and Pacific regions should be noted. In Québec, this increase is largely due to higher mortality rates in injury and poisoning deaths, and neoplasms, where in the Pacific region, mortality rates for diseases of the circulatory system and neoplasms have contributed to the rise (data not shown).

Figure 4.5
Age-standardized Mortality Rates 1979-1993*
First Nations and Canadian Populations



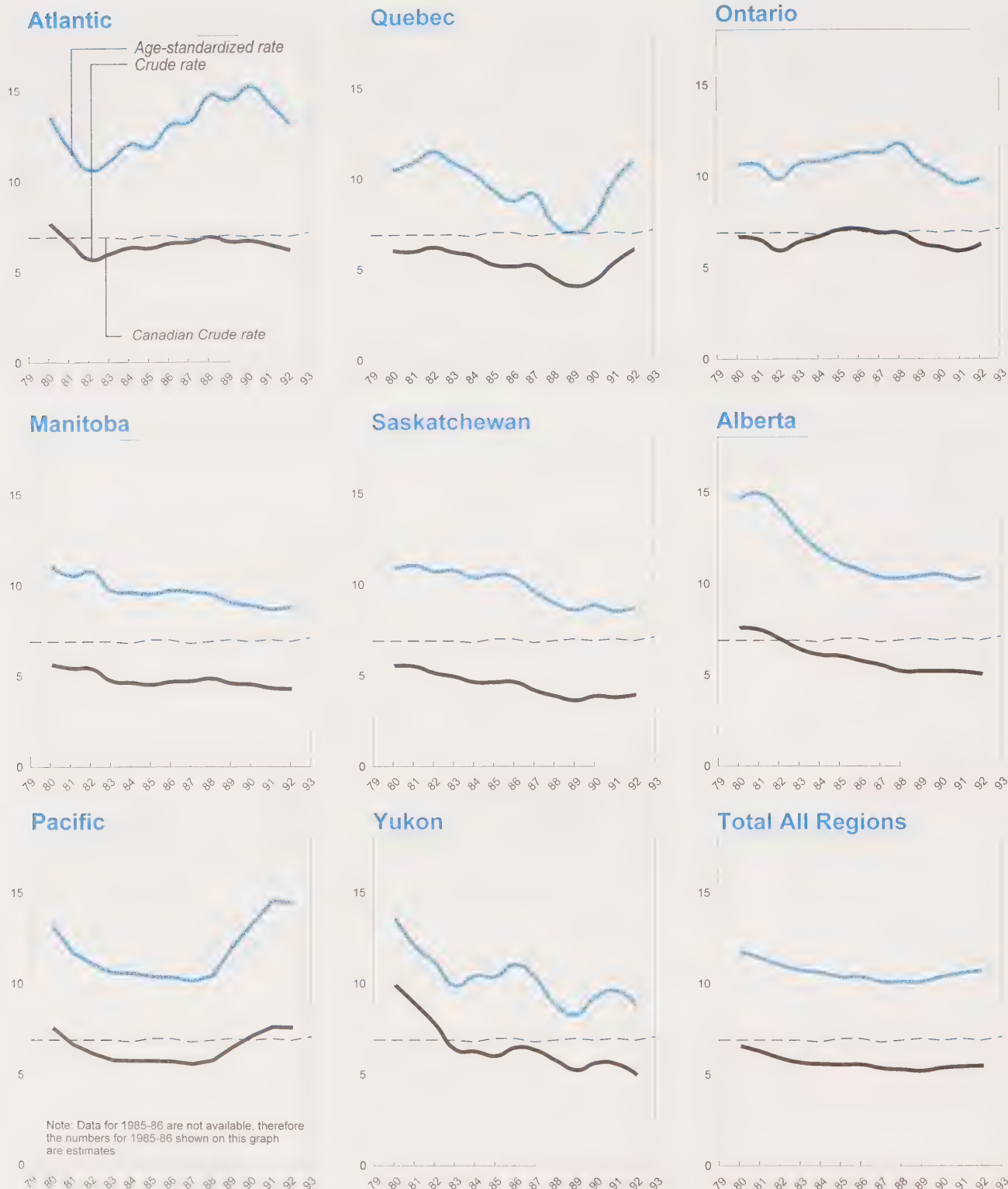
* Deaths per 1,000 population, First Nations rates are age-standardized to the 1991 Canadian Population
 Sources: Medical Services Branch in-house statistics

Table 4.2
Age-standardized Mortality Rates 1979-1993*
First Nations vs. Canadian Populations

Year	First Nations Female	First Nations Male	First Nations Total	Canadian Female	Canadian Male	Canadian Total
1979	11.3	13.1	12.4	7.3	9.3	8.3
1980	11.3	12.4	11.9	7.3	8.9	8.1
1981	10.2	11.9	11.2	7.1	9.0	8.0
1982	9.6	12.5	11.4	7.1	8.8	8.0
1983	9.2	11.6	10.7	7.0	8.6	7.8
1984	9.3	11.2	10.4	6.8	8.4	7.6
1985	10.3	11.5	11.0	6.9	8.5	7.7
1986	8.3	11.4	10.0	6.9	8.3	7.6
1987	9.7	11.0	10.4	6.5	7.9	7.2
1988	8.8	11.3	10.2	6.5	8.0	7.2
1989	9.4	10.6	10.0	6.5	7.9	7.2
1990	9.3	11.5	10.4	6.4	7.7	7.0
1991	10.2	11.8	11.0	6.4	7.6	7.0
1992	9.3	11.8	10.6	6.2	7.4	6.8
1993	10.0	11.5	10.8	6.3	7.4	6.9
Change 1979-93	-1.3	-1.6	-1.6	-1.0	-1.9	-1.4

* Deaths per 1,000 population, First Nations rates are age-standardized to the 1991 Canadian Population
 Sources: Medical Services Branch in-house statistics

Figure 4.6
*Three-year Moving Mortality Rates, Crude and Age-standardized**
By Region, First Nations 1979-1993



* Deaths per 1,000 population. For a description of moving rates, please see glossary. First Nations rates are age-standardized to the 1991 Canadian population
 See Appendix 4 for table values of three-year average of crude and age-standardized mortality, by gender
 Source: Medical Services Branch in-house statistics

5.0 INFANT MORTALITY

Highlights

- The infant mortality rate (deaths under one year of age) is widely regarded as a major indicator of socioeconomic conditions and health status.
- The infant mortality rate among First Nations people fell by 60 percent between 1979 and 1993. The main decrease was observed between 1979 and 1987; thereafter, the rates levelled off and even showed some increase in the early 1990s, although this trend seems to have ended with the 1993 statistics.
- Although the gap is smaller than it was in 1979, the infant mortality rate among First Nations people remains 1.7 times the national average.
- The infant mortality rate is often broken down into two smaller time intervals: from birth to 28 days (neonatal mortality), and from 28 days to one year (post-neonatal mortality). Neonatal mortality rates in general tend to reflect access to services and quality of health care, as well as events during the prenatal period and during and immediately after labour. In contrast, the post-neonatal rate tends to be more sensitive to socioeconomic and environmental factors that may influence the survival of infants.
- The neonatal mortality rate used to be much higher than average among First Nations infants, but it has decreased since 1979 and is now around the national average.
- The post-neonatal mortality rate also showed substantial improvement over the 1979–1993 period. Even so, the disparity between the First Nations and Canadian populations has remained, since the Canadian rate also improved over these years. The rate among First Nations infants has consistently been triple the Canadian rate.
- The stillbirth ratio among First Nations people (deaths of fetuses of 20 weeks or more gestation) is still 1.7 times the national average, although it has improved in recent years.

Infant mortality is regarded as an important indicator of socioeconomic conditions, relating to factors such as poverty, unemployment, and lifestyle. The following statistics support the validity of this premise, as not only are First Nations communities economically depressed, with high unemployment, low incomes, low educational achievement and poor living conditions, but this population suffers from higher infant mortality rates than the general Canadian population. Lifestyle is also a factor in birth outcome and infant mortality. However, lifestyle choices such as smoking and substance abuse during pregnancy, and state of maternal health have also been linked to socioeconomic circumstance.

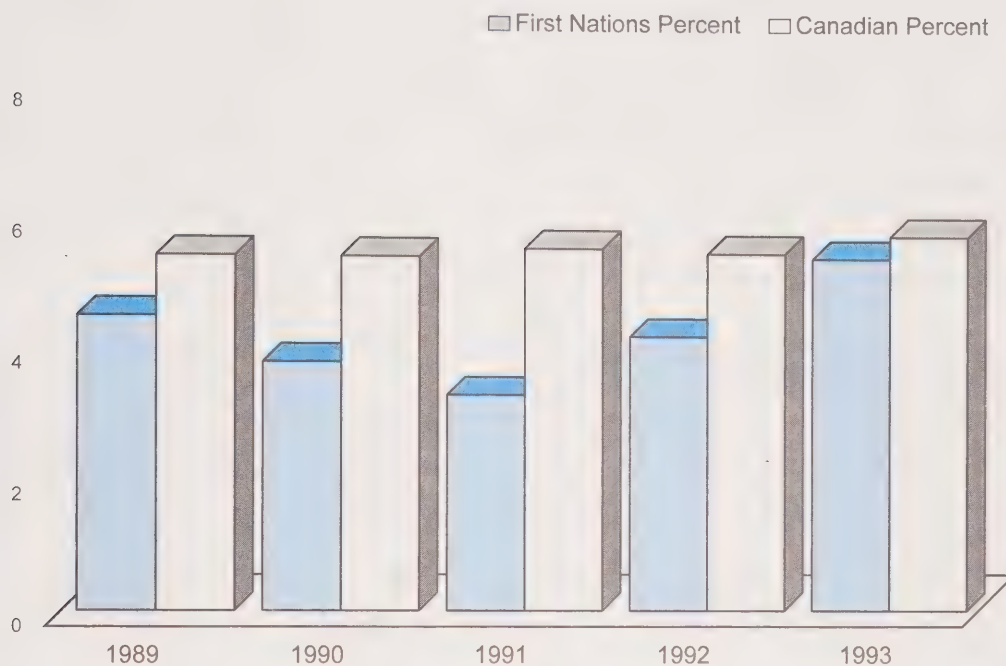
5.1 Low Birthweight

Low birthweight is defined as infants weighing less than 2.5 kilograms at birth. This is of interest in the First Nations population, as it has a strong impact on infant mortality rates. Low birthweight is associated with poverty, in particular with by-products of poverty such as poor nutrition, small stature, poor maternal health status, and lifestyle factors such as smoking and substance abuse.¹⁰ As poor socioeconomic status is seen generally among First Nations people, it is expected that there would be a higher percentage of low birthweight infants in this population compared with the Canadian population. But as Figure 5.1 shows, First Nations infants are **less** likely to be born of low weight than their Canadian counterparts. However, low birthweight has been identified as a more serious issue in First Nations communities, as these infants experience a higher mortality rate.¹¹ Low birthweight children are more likely to have chronic conditions, to require hospitalization and bed rest, to have limitations in activity, poorer health status, chronic respiratory conditions and conditions of the nervous system and sense organs.¹²

It has been suggested that the cutoff point for low birthweight in Aboriginal infants be 2.7 kilograms, rather than 2.5 kilograms, as the mean birthweight of Aboriginal infants has been shown to be higher than the Canadian mean. This higher birthweight may be partially due to the prevalence of diabetes in the Aboriginal population. Research has indicated that the offspring of Aboriginal women who are diabetic during pregnancy, regardless of the extent of maternal obesity, are more likely to be heavier at birth.¹³

Figure 5.1

Percentage of Low Birthweight* Infants First Nations and Canada, 1987-1993



* Low birthweight refers to infants weighing less than 2.5 kilograms at birth
Sources: Medical Services Branch in-house statistics and Statistics Canada

Table 5.1

Percentage of Low Birthweight* Infants First Nations and Canada, 1987-1993

Year	First Nations		Canadian	
	Number	Percent	Number	Percent
1989	483	4.5	21,303	5.4
1990	429	3.8	21,963	5.4
1991	386	3.3	22,315	5.5
1992	503	4.2	21,818	5.5
1993	659	5.4	22,311	5.7

* Low birthweight refers to infants weighing less than 2.5 kilograms at birth
Sources: Medical Services Branch in-house statistics and Statistics Canada

5.2 Infant Mortality Rates

As Figure 5.2 depicts, the pattern of infant mortality in First Nations has changed markedly since 1979. In that year, male mortality was 31.3 deaths per 1000 live births, 31.5 percent greater than the female rate of 23.8 deaths per 1000 live births (Table 5.2). Throughout the succeeding 15 years, the difference of rates based on sex has steadily disappeared, and for the first time in 1993, the female First Nations infant mortality rate of 11.5 deaths per 1000 live births exceeded the male rate of 10.3. These conclusions are based on estimates of the number of male and female live births. Both the female and male rates underwent significant decreases until 1987, at which point a levelling trend was seen, which lasted until 1990. An increase in the rates of both sexes in the early 1990s has appeared to end with the 1993 data, although one year's data are not sufficient to identify a trend.

Canadian infant mortality has declined consistently from 1979 (10.9 deaths per 1000 live births) to 1992 (6.1 deaths per 1000 live births). Canadian infant mortality rose slightly for the first time in 1993. In 1979, the overall First Nations infant mortality rate of 27.6 deaths per 1000 live births was 2.5 times the Canadian rate. When the Canadian population is used as a comparator for total First Nations infant mortality, the improvements in the First Nations rate until 1987 are striking (see Figure 5.2). In 1987, First Nations infant mortality was 12.5 deaths per 1000 live births. Since then the Canadian and First Nations rates have roughly paralleled each other. In 1993, the First Nations rate of 10.9 deaths per 1000 live births was an improvement of over 60 percent from 1979. Even so, it was still 1.7 times the Canadian rate of 6.3.

Figure 5.2 also provides gender-specific Canadian infant mortality data. Male Canadian infants experience a higher mortality rate than female infants, although the difference is not as great as that seen with First Nations prior to 1993. Similar to the pattern with First Nations rates, this gap has been disappearing throughout the period under review.

5.3 Neonatal and Post-neonatal Mortality Rates

The one-year infant mortality rate can be broken down using two smaller time intervals: the neonatal rate (deaths of infants under 28 days of age) and the post-neonatal mortality rate (deaths of infants from the 28th day to one year of age). Neonatal mortality rates in general are more sensitive to health care measures than the post-neonatal rate¹⁴ and reflect access to services and quality of health care, as well as events during the prenatal, labour and immediate post-labour periods.

Figure 5.2

Infant Mortality Rates 1979-1993

First Nations and Canada by Gender and Total

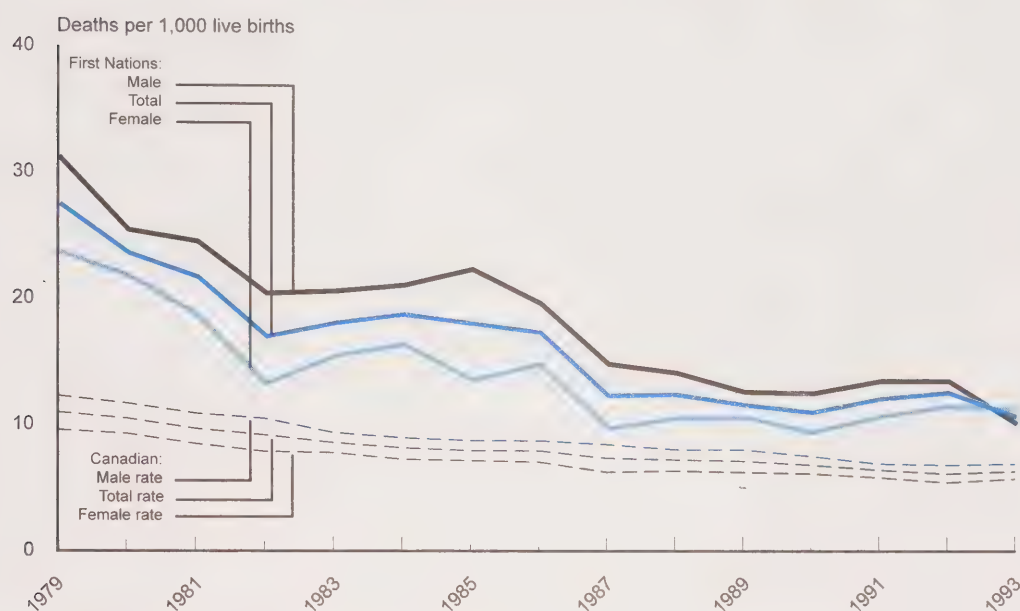


Table 5.2

Infant Mortality Rates* 1979-1993

First Nations and Canada by Gender and Total

Year	First Nations Total	First Nations Female	First Nations Male	Canadian Total	Canadian Female	Canadian Male
1979	27.6	23.8	31.3	10.9	9.5	12.2
1980	23.7	21.9	25.5	10.4	9.2	11.6
1981	21.8	18.8	24.6	9.6	8.4	10.8
1982	17.1	13.4	20.5	9.1	7.8	10.4
1983	18.2	15.6	20.7	8.5	7.7	9.3
1984	18.9	16.5	21.2	8.1	7.2	8.9
1985	18.2	13.7	22.5	7.9	7.1	8.7
1986	17.5	15.0	19.8	7.9	7.0	8.7
1987	12.5	9.9	15.0	7.3	6.2	8.4
1988	12.6	10.7	14.3	7.2	6.3	8.0
1989	11.8	10.8	12.8	7.1	6.2	8.0
1990	11.2	9.6	12.7	6.8	6.1	7.5
1991	12.3	10.9	13.7	6.4	5.8	6.9
1992	12.8	11.7	13.7	6.1	5.4	6.8
1993	10.9	11.5	10.3	6.3	5.7	6.9
Change 1979-93	-16.7	-12.3	-21.0	-4.6	-3.8	-5.3

* Deaths per 1,000 live births

Sources: Medical Services Branch in-house statistics and Statistics Canada

A comparison of First Nations and Canadian three-year average neonatal mortality from 1979–1993 is given in Figure 5.3, with accompanying data in Table 5.3. This diagram illustrates that although the First Nations rate was 61.7 percent higher than the Canadian rate in the first three years under review, it has declined more sharply than the Canadian rate, and by 1991–1993 was 4.7 deaths per 1000 live births, only 14.6 percent higher than the Canadian average of 4.1. In terms of annual data, First Nations neonatal mortality dropped below the Canadian rate (Table 5.3) for the first time in 1993. This could suggest that health services provided to First Nations in the four weeks post-birth are of comparable quality to Canadians. However, this interpretation is tempered by the fact that more First Nations fetuses die before childbirth compared with the Canadian population overall and this elevated stillbirth rate may have influenced the neonatal rate, which only records deaths occurring after birth.

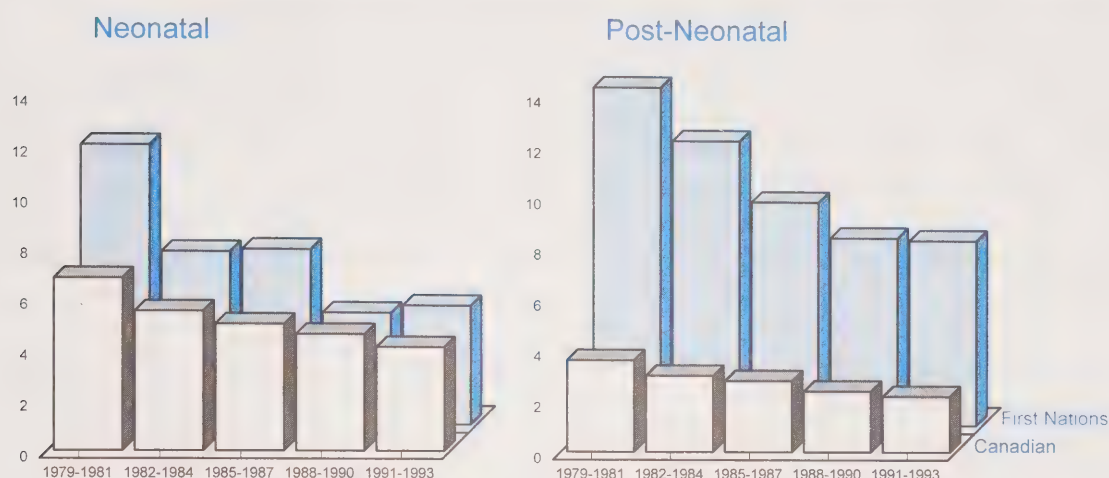
The post-neonatal rate, which begins at 28 days of age, is a more sensitive barometer than the infant mortality rate of the impact of socioeconomic factors that may influence infant survival. The right graph in Figure 5.3 gives a parallel comparison to the neonatal death rate above. The First Nations rate has shown substantial improvement from 13.3 deaths per 1000 live births in 1979–1981 to 7.3 deaths per 1000 live births in 1991–1993. Even so, the disparity between the First Nations and Canadian populations has remained, as the Canadian rate for this time period has also improved. The First Nations post-neonatal rate, as expressed through three-year averages, remained more than three times the Canadian rate throughout 1979–1993.

Figure 5.3 also illustrates the differing contributions of neonatal and post-neonatal rates to total infant mortality in these two populations. First Nations infants experience higher post-neonatal rates than neonatal rates, where Canadian infants have a higher neonatal than post-neonatal rate. As equity in the neonatal rate between First Nations and Canadian populations has been achieved, it is likely that the greatest gains in the First Nations infant mortality rate will occur through lowering the post-neonatal rate via improvements in the socioeconomic status and living conditions of First Nations people and their access to health services, and also through advancements in health care.

Figure 5.3

Neonatal and Post-neonatal Mortality Rates*

First Nations and Canadian Populations, Three-year Averages 1979-1993



* Deaths per 1,000 live births

Sources: Medical Services Branch in-house statistics and Statistics Canada

Table 5.3

Neonatal and Post-neonatal Mortality Rates* Annual and Three-year Averages

First Nations and Canadian Populations, 1979-1993

Year	Canadian			First Nations		
	Neonatal	Post-neonatal	Total Infant	Neonatal	Post-neonatal	Total Infant
1979	7.2	3.7	10.9	13.1	14.5	27.6
1980	6.7	3.8	10.4	9.9	13.9	23.7
1981	6.4	3.2	9.6	10.2	11.5	21.8
1982	5.9	3.1	9.1	8.5	8.5	17.1
1983	5.5	3.1	8.5	6.0	12.2	18.2
1984	5.2	3.0	8.1	5.8	13.1	18.9
1985	5.2	2.7	7.9	7.8	10.4	18.2
1986	5.1	2.8	7.9	8.7	8.8	17.5
1987	4.5	2.8	7.3	5.0	7.6	12.5
1988	4.6	2.6	7.2	4.0	8.6	12.6
1989	4.7	2.5	7.1	5.0	6.8	11.8
1990	4.6	2.2	6.8	4.2	7.0	11.2
1991	4.1	2.3	6.4	5.2	7.1	12.3
1992	4.0	2.1	6.1	5.0	7.8	12.8
1993	4.2	2.1	6.3	4.0	6.9	10.9
Change 1979-93	-3.0	-1.6	-4.6	-9.1	-7.6	-16.7
3 Year Average						
79-81	6.8	3.6	10.3	11.0	13.3	24.3
82-84	5.5	3.0	8.6	6.8	11.2	18.0
85-87	5.0	2.8	7.7	6.9	8.8	15.6
88-90	4.6	2.4	7.0	4.4	7.4	11.8
91-93	4.1	2.2	6.3	4.7	7.3	12.0

* Deaths per 1,000 live births

Sources: Medical Services Branch in-house statistics and Statistics Canada

5.4 Stillbirths and Perinatal Mortality Rates

Stillbirths are defined by the Medical Services Branch as the deaths of fetuses of more than 20 weeks' gestation, or more than 500 grams in weight. The stillbirth rate is expressed per 1000 total births. Because of the small order of magnitude of yearly data, the annual rates tend to show abrupt changes. In order to discern trends more clearly, a three-year moving average has been used to plot the First Nations stillbirth mortality rate from 1979 to 1993 in Figure 5.4. The annual Canadian rate has been included for comparison purposes, and shows only a marginal improvement over the time period, with a slight movement upwards in 1992 and 1993. The trend for the First Nations stillbirth rate has been downward, after increasing in the first half of the 1980s.

Table 5.4 provides the mortality rate values used to plot Figure 5.4. The First Nations stillbirth rate of 9.6 deaths per 1000 total births in 1991–1993 is an improvement of 18.6 percent over the 1979–1981 rate of 11.8. However in 1991–1993, the First Nations rate was still 1.7 times that the Canadian rate of 5.8 deaths per 1000 total births, similar to the 1.6 times difference seen in 1979–1981. The indicator that is a summation of stillbirths and post-birth deaths of up to seven days is the perinatal mortality rate and is shown in Figure 5.5. A visual comparison of this rate from 1979–1993 with the stillbirth rate (Figure 5.4), shows the high impact of mortality in the first week for both First Nations and Canadian infants. For First Nations in the years 1991–1993, subtracting the stillbirth rate from the perinatal rate shows that 3.6 deaths per 1000 total births occurred in the first week of life, compared with 8.6 in 1979–1981.

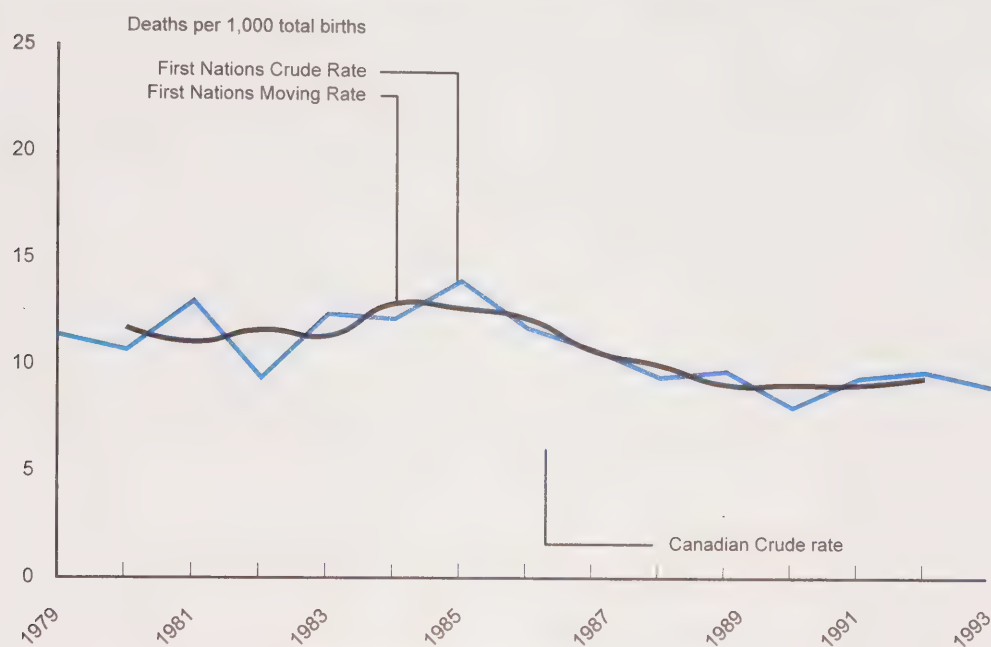
The First Nations perinatal rate has decreased more significantly than the stillbirth rate. The perinatal rate of First Nations infants measured by three-year averages improved by 35.3 percent from 20.4 deaths per 1000 total births in 1979–1981 to 13.2 deaths per 1000 total births in 1991–1993 (Table 5.5).

Interestingly, the Canadian perinatal rate, which declined consistently from 1979 to 1991 (reaching a low of 6.8 deaths per 1000 live births), has recently increased in 1992 and 1993 to 9.4 deaths per 1000 live births. This is an increase of 38.2 percent in one year, which is highly significant in the large Canadian population. Comparison of the perinatal rate with the stillbirth rate (Figure 5.4) indicates that this increased mortality occurred mainly in the first week of life. The increasing perinatal rate appears to be the largest contributor to the increase in Canadian infant mortality rate in 1993, noted in section 5.2 above. As this is the only rate that includes just the immediate post-birth period of seven days, the perinatal rate is a very sensitive indicator, among other things, of the effect of changes in post-natal care. The reasons for the increasing perinatal rate have not yet been determined, but potential areas for evaluation include changing birthing practices both within and outside hospitals, the shortened length of stay after birth, the impact of new reproductive technologies, including the use of fertility drugs, and changing demographics.

Figure 5.4

Stillbirths, Crude and Three-year Moving Rates*

First Nations and Canadian Populations, 1979-1993



* For a description of moving rates, please see glossary
Sources: Medical Services Branch in-house statistics and Statistics Canada

Table 5.4

Stillbirths, Crude and Three-year Moving Rates*

First Nations and Canadian Populations, 1979-1993

Year	First Nations Crude Rate	First Nations Moving Rate**	Canadian Crude Rate
1979	11.5		7.6
1980	10.8	11.8	7.0
1981	13.1	11.1	7.3
1982	9.5	11.7	7.2
1983	12.5	11.4	6.9
1984	12.3	13.0	6.2
1985	14.1	12.8	6.3
1986	11.9	12.3	6.2
1987	10.9	10.8	6.2
1988	9.6	10.1	6.1
1989	9.9	9.2	6.3
1990	8.2	9.2	5.9
1991	9.6	9.2	5.4
1992	9.9	9.6	6.1
1993	9.2		6.0

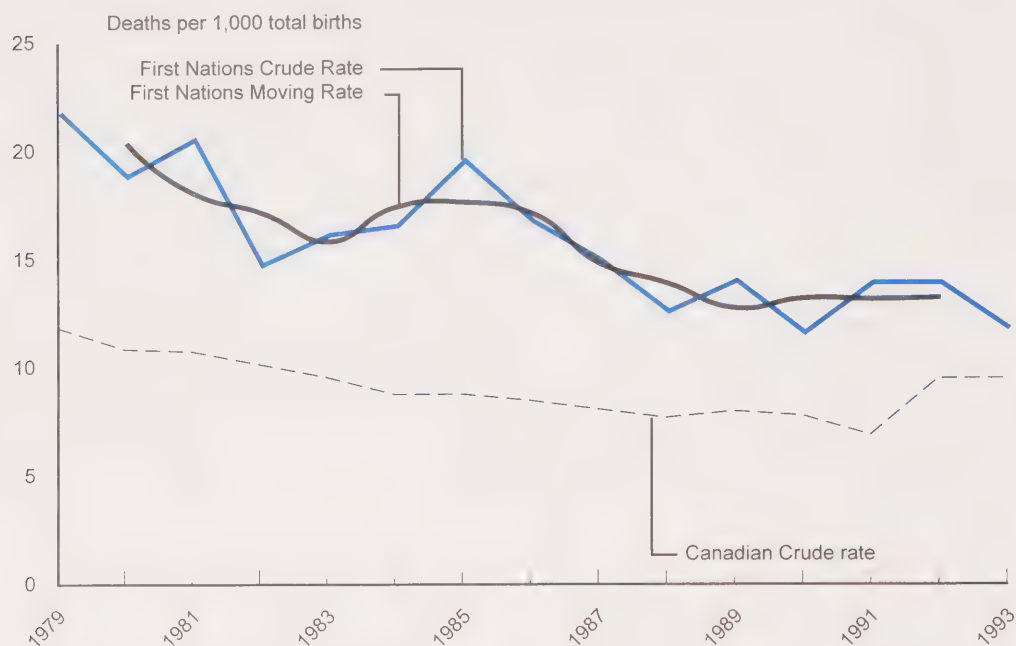
* Deaths per 1,000 total births

** Rates shown are a three-year average; for example the 1980 value is the average of the 1979, 1980 and 1981 crude rates

Sources: Medical Services Branch in-house statistics and Statistics Canada

Figure 5.5

*Perinatal Deaths, Crude & Three-year Moving Rates** *First Nations and Canadian Populations, 1979-1993*



* For a description of moving rates, please see glossary

Sources: Medical Services Branch in-house statistics and Statistics Canada

Table 5.5

*Perinatal Deaths, Crude & Three-year Moving Rates** *First Nations and Canadian Populations, 1979-1993*

Year	First Nations Crude Rate	First Nations Moving Rate**	Canadian Crude Rate
1979	21.8		11.8
1980	18.9	20.4	10.8
1981	20.6	18.1	10.7
1982	14.8	17.2	10.1
1983	16.2	15.9	9.5
1984	16.6	17.5	8.7
1985	19.6	17.7	8.7
1986	16.8	17.1	8.4
1987	15.0	14.8	8.0
1988	12.6	13.9	7.6
1989	14.0	12.7	7.9
1990	11.6	13.2	7.7
1991	13.9	13.1	6.8
1992	13.9	13.2	9.4
1993	11.8		9.4

* Deaths per 1,000 total births

** Rates shown are a three-year average; for example the 1980 value is the average of the 1979, 1980 and 1981 crude rates

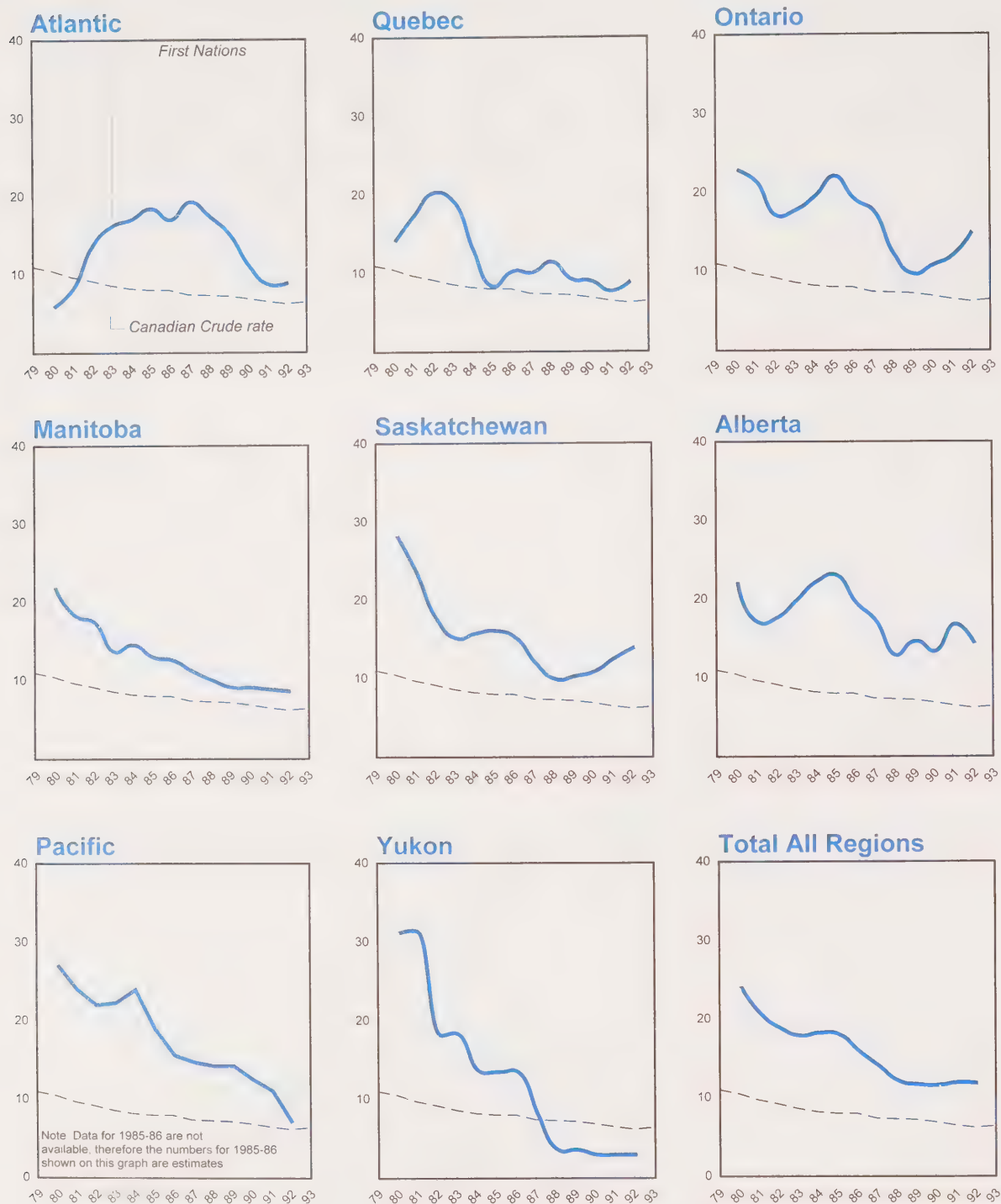
Sources: Medical Services Branch in-house statistics and Statistics Canada

5.5 Regional Profile

Figure 5.6 presents an overview of infant mortality in the eight regions from 1979–1993. Moving three-year averages have been used to reduce the annual fluctuations resulting from small numbers of deaths in the regions. The pattern of infant mortality among the regions is highly variable, both in magnitude of the rates and their trends. It is difficult to determine how much of this variability is due to real changes in infant mortality, and how much is simply due to differences in how regions collect their information. In general, all regional infant mortality rates with the exception of the Atlantic region have decreased from 1979 to 1993. In this case, a low reported mortality rate from 1979–1981 was followed by a large increase in the mid-1980s. Although this trend has reversed, the infant mortality rate in 1993 has not yet returned to its former level. Appendix 5 provides three-year averages for stillbirth, perinatal, neonatal, post-neonatal and infant mortality rates by region. The parameters used to define stillbirth rates (birth weight or gestational age) vary among regions.

Figure 5.6

*Three-year Moving Infant Mortality Rates** By Region, First Nations 1979-1993



* Deaths per 1,000 live births. For a description of moving rates, please see glossary
See Appendix 5 for tables of three-year regional mortality data for still births, perinatal, neonatal, post-neonatal and infant mortality
Sources: Medical Services Branch in-house statistics and Statistics Canada

6.0 FIRST NATIONS DEATHS BY CAUSE

Highlights

- The mortality data for First Nations people show evidence of an “epidemiologic transition”, that is, a change in the main causes of death from infectious diseases to chronic conditions such as cardiovascular disease and cancer.
- Among First Nations infants, death rates from all causes decreased over the 1979–1993 period, but some rates decreased faster than others. Deaths from infectious and parasitic diseases became less frequent, while conditions such as sudden infant death syndrome (SIDS) and congenital anomalies did not decrease as much, and are now among the main causes of infant death.
- Rates of death for First Nations people exceed the Canadian average for all causes except cancers and perinatal conditions.
- Among First Nations people as a whole, the four leading causes of death are injury and poisoning, diseases of the circulatory system, cancers, and diseases of the respiratory system. Three of these have decreased over the period under consideration. Rates of death from injury and poisoning fell by 36 percent, but this remains the leading cause of death. Rates of death from diseases of the circulatory and respiratory systems fell more slowly.
- Of the top four causes of death, cancer was the only one that increased over the 1979–1993 period. Historically, First Nations people have had a different pattern of cancer mortality from the Canadian population in general. However, since 1979 the rates have risen 38 percent, and it seems likely that in the near future, rates among First Nations people will for the first time exceed the national average.
- The main causes of potential years of life lost (PYLL) were injury and poisoning, which accounted for 55 percent of all potential years of life lost, and ill-defined conditions.

First Nations deaths in the Medical Services Branch database are classified by the ninth revision of the International Classification of Disease (ICD-9) codes. The first level of classification in this system involves assignment into one of 17 main chapter descriptions. Appendix 6 lists the descriptions of the ICD-9 chapters. Deaths in the Medical Services Branch database are itemized by chapter.

Data on First Nations mortality provide evidence of an “epidemiologic transition” postulated by Omram in 1971, whereby populations undergo a change from a prevalence of pestilence and famine to degenerative, chronic and man-made diseases.¹⁵ In the First Nations population over the last 50 years, the pattern of mortality has shifted from an emphasis on infectious and parasitic diseases to an increasing importance of intentional and non-intentional injury, and chronic conditions including cardiovascular diseases, cancers, and diabetes.

Worldwide, the decline of infectious diseases has been associated with an improved standard of living, including better nutrition, and to a lesser extent public health interventions, rather than to specific medical services or changes in disease etiology.¹⁶ There are many factors implicated in the rise of chronic diseases, including lifestyle choices such as smoking and alcohol abuse (also linked to socioeconomic status), and physical environment, including pollution, heredity, metabolism, diet, obesity, occupation and physical activity. On a disease-specific basis, the relative importance of each factors varies.

6.1 Infant Mortality

Figure 6.1 provides a comparison of the causes of mortality by percentage among First Nations children up to one year for the two five-year periods 1979–1983 and 1989–1993. Table 6.1 provides accompanying mortality rates by cause. All mortality rates declined in 1989–1993, compared with 1979–1983. Over 70 percent of the deaths in both time periods are attributable to the following three causes:

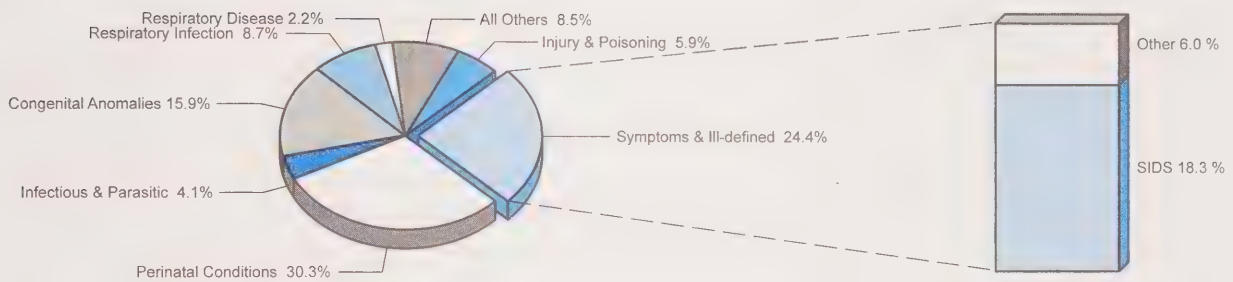
- Conditions arising in the perinatal period constituted 30.3 percent of all deaths in 1979–1983, decreasing to 24.1 percent of deaths in 1989–1993. The corresponding mortality rate for this chapter decreased by more than 50 percent to 283.9 deaths per 100 000 population in 1989–1993.
- The proportion of deaths attributable to sudden infant death syndrome (SIDS) rose from 18.3 percent to 26.9 percent. This is the major cause of death in the category of ill-defined symptoms. Although the mortality rate declined by 20 percent to 316.5 deaths per 100 000 in 1989–1993, SIDS was the leading cause of death in infants.
- The proportion of deaths due to congenital anomalies increased from 15.9 percent to 18.8 percent. The mortality rate shows a substantial decline of 35.3 percent to 221.9 deaths per 100 000 in 1989–1993.

Figure 6.1

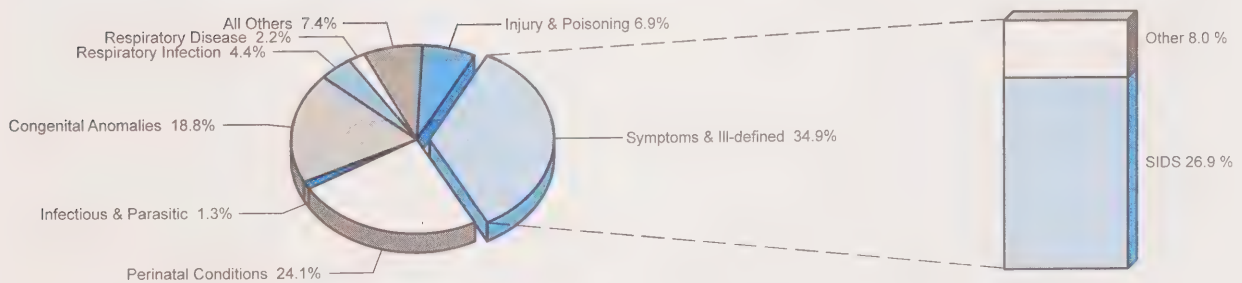
Causes of Infant Mortality as a Percentage of Total Deaths

First Nations, for Time Periods 1979-83 and 1989-93

1979-1983 (n=828)



1989-1993 (n=685)



Source: Medical Services Branch in-house statistics

Table 6.1

Infant Mortality Rates by Cause*

First Nations, for Time Periods 1979-1983 and 1989-1993

Cause	Sub-Category	1979-1983	1989-1993
Ch. 16 Symptoms & Ill-defined	SIDS	394.8	316.5
	Other	129.9	94.6
Ch. 15 Perinatal Conditions		651.9	283.9
Ch. 14 Congenital Anomalies		342.8	221.9
All Others		181.8	87.7
Ch. 17 Injury & Poisoning		127.3	80.9
Ch. 08 Respiratory Disease	Respiratory Infection	187.0	51.6
	Other	46.7	25.8
Ch. 01 Infectious & Parasitic		88.3	15.5

* Deaths per 100,000 population

Ranking based on average mortality (deaths per 100,000 population) for 1989-1993 time period

Source: Medical Services Branch in-house statistics

The ICD-9 category of diseases of the respiratory system has been divided into respiratory system infections and other respiratory diseases. Infant mortality from respiratory infections, often a consequence of inadequate housing conditions, delays in accessing treatment, low socioeconomic status and other factors such as air pollution and exposure to cigarette smoke, has decreased from 187.0 deaths per 100 000 in 1979–1983 to 51.6 in 1989–1993. Similarly, the proportion of deaths due to infectious and parasitic diseases has decreased more than five-fold over these two intervals.

The proportion of infant deaths due to injury and poisoning has increased slightly between 1979–1983 and 1989–1993 of all deaths to 6.9 percent from 5.9 percent. The mortality rate for this category decreased by 36.4 percent during these two periods.

6.2 Overall Mortality

Table 6.2 ranks, using crude mortality rates, the top 10 causes of death as defined by the ICD-9 codes for the five three-year time periods from 1979–1993. The four leading causes of death have not changed their ranking throughout this interval, even though three of the four causes have seen significant decreases in their crude mortality rates. The leading cause remains deaths due to injury and poisoning. This category has seen a 36.6 percent improvement in mortality rates, from 243 deaths per 100 000 population in 1979–1981 to 154 deaths per 100 000 population in 1991–1993.

Diseases of the circulatory and respiratory systems, the second and fourth leading causes of death, have had lesser decreases in crude mortality rates over this period: 11.1 percent and 6.5 percent respectively.

The third leading cause of death throughout 1979–1993 is neoplasms. Historically, First Nations have had a different pattern of mortality due to cancers than have Canadians as a whole. For example, in Saskatchewan, for the period 1968–1986, First Nations had a lower incidence of cancers in many sites compared with the Canadian population, and only for cancers of the cervix, brain, myeloid leukemia, kidney and lung in women were the standardized incidence rates higher than Canadians.¹⁷ A trend analysis of cancer among First Nations in Saskatchewan that looked at 1967–1986 cancer mortality rate data concluded that their rapid rise pointed to the possibility of First Nations rates exceeding the Canadian rates within the next decade.¹⁸ Data provided in Table 6.2 substantiate this continued rise in neoplasms nationally among the First Nations population, from 55 deaths per 100 000 population in 1979–1981 to 76 in 1991–1993, a difference of 38.2 percent.

Table 6.2

Death Rates by Selected Causes*

Three-year Averages, 1979-1993

First Nations

ICD Main Chapter**	1979-1981	1982-1984	1985-1987	1988-1990	1991-1993
Ch. 17 Injury & Poisoning	243.0	190.0	182.0	157.0	154.0
Ch. 07 Circulatory Disease	152.0	145.0	132.0	134.0	135.0
Ch. 02 Neoplasms	55.0	58.0	60.0	70.0	76.0
Ch. 08 Respiratory Disease	46.0	47.0	43.0	42.0	43.0
Ch. 16 Symptoms & Ill-defined	29.0	23.0	28.0	28.0	29.0
Ch. 09 Digestive Disease	38.0	28.0	24.0	25.0	28.0
Ch. 03 Endocrine & Immune	13.0	11.0	16.0	14.0	18.0
Ch. 01 Infectious & Parasitic	14.0	9.0	11.0	6.0	10.0
Ch. 14 Congenital Anomalies	12.0	11.0	11.0	8.0	9.0
Ch. 15 Perinatal Conditions	21.0	13.0	11.0	8.0	8.0

Ranking based on average mortality (deaths per 100,000 population) for 1991-1993 time period

* Deaths per 100,000 population

** See Appendix 6 for a description of the ICD-9 chapters

Source: Medical Services Branch in-house statistics

Of the remaining 10 causes of First Nations mortality shown in Table 6.2, only the category of endocrine and immunity disorders has increased. This ICD-9 chapter includes deaths due to diabetes and associated conditions. The increased incidence of diabetes among the Aboriginal peoples of Canada has been extensively researched and reviewed.¹⁹ In a 1977–1982 review, mortality rates from diabetes were 2.2 times higher among Registered Indian men and 4.1 times higher among Registered Indian women than in the general Canadian population.²⁰

The crude death rate for ill-defined conditions has remained stable over 1979–1993, and decreases have been seen in the death rates for digestive diseases, infectious and parasitic diseases, congenital anomalies and perinatal conditions (Table 6.2).

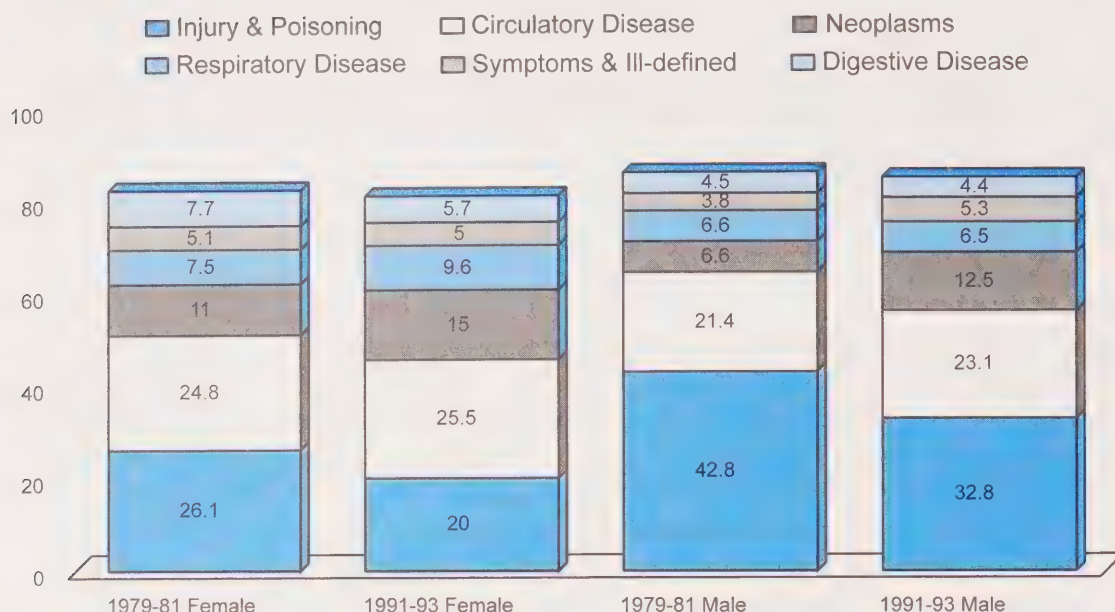
6.3 Leading Causes of Death by Gender

Analysis of gender-specific differences in the leading causes of death is given in Figure 6.2 which compares 1979–1981 and 1991–1993 data. In 1979–1981 for both males and females, injuries and poisoning deaths were the highest, followed by circulatory diseases. Injury and poisoning accounted for 42.8 percent of deaths in First Nations males, and 26.1 percent in females. This has dropped to 32.8 percent (males) and 20.0 percent (females) in 1991–1993. Also in 1991–1993, circulatory diseases have overtaken injury and poisoning deaths as the leading cause of death in female First Nations people. The category which has posted the largest increase in percentage of total deaths between these two time periods is neoplasms. It remains the third leading cause of death for both genders. In males, neoplasms have increased from 6.6 percent of deaths in 1979–1981 to 12.5 percent in 1991–1993, and in females, the increase has been from 11 percent to 15 percent.

Table 6.3 shows the changes in mortality rates by ICD-9 chapter and gender for the same time period. The greatest improvements in female First Nations mortality were in diseases of the digestive system and injury and poisoning deaths. In males, the greatest gains were seen in injury and poisoning deaths, followed by diseases of the respiratory system.

Figure 6.2

*Leading Causes of Death by Gender
as a Percentage of Total Deaths
First Nations, 1979-1981 and 1991-1993*



Source: Medical Services Branch in-house statistics

Table 6.3

Mortality Rates by Cause
First Nations, by Gender
For Time Periods 1979-1981 and 1991-1993*

Female	1979-1981	1991-1993	Male	1979-1981	1991-1993
Circulatory Disease	130.0	116.2	Injury & Poisoning	345.3	218.3
Injury & Poisoning	136.6	91.0	Circulatory Disease	172.5	153.6
Neoplasms	57.5	68.5	Neoplasms	52.9	83.4
Respiratory Disease	39.3	43.5	Respiratory Disease	53.4	43.4
Digestive Disease	40.1	25.8	Symptoms & Ill-defined	30.3	35.5
Symptoms & Ill-defined	26.8	22.8	Digestive Disease	36.5	29.4

* Deaths per 100,000 population for the leading causes of death
Ranking based on average mortality (deaths per 100,000 population) for 1991-1993 time period
Source: Medical Services Branch in-house statistics

6.4 Leading Causes of Death by Age

Table 6.4 breaks down the leading causes of death by age categories. The following observations can be made:

- In infants, as noted above, the category of ill defined conditions (of which the main component is SIDS) is the leading cause of death.
- From 1 to 44 years of age, injury and poisoning is the most common cause of death.
- Deaths due to circulatory system disease and neoplasms are associated with increasing age. For example, circulatory diseases are the fourth largest cause of death in the 15 to 24 year age group, advancing to the leading cause in the population 45 years and older.
- Respiratory disease is among the top six causes of death in all age categories except the 25 to 44 age group.
- Infectious and parasitic diseases rank as the fifth leading cause of death in children aged 1 to 14 years, behind injury and poisoning, neoplasms, congenital anomalies and respiratory diseases.
- The category of endocrine/immune disorders is the sixth leading cause of death in the 45 to 64 age group and rises to the fourth leading cause in the 65 plus age group. The association of endocrine/immune disorders with advancing age may be related to the increasing importance of chronic conditions such as diabetes.

6.5 Age-standardized Comparison of Leading Causes of Death

Differences between First Nations and Canadian populations in leading causes of death are seen in the age-standardized comparison for the years 1991–1993, as provided in Figure 6.3. First Nations age-standardized death rates exceed Canadian rates in all categories depicted except neoplasms and perinatal conditions. The main points are summarized below:

- The injury and poisoning death rate is 3.8 times higher in First Nations. This is basically unchanged from the years 1984–1988.²¹
- The circulatory disease death rate in First Nations is 1.3 times the Canadian rate. A national analysis of circulatory disease deaths looked at death certificates of residents aged 1-69 years in First Nations communities in seven provinces for the years 1977–1982. It found that the age-standardized mortality rates for ischemic heart disease and stroke were higher among First Nations females than for all Canadians, and the stroke rate was higher among First Nations males.²²
- The neoplasm death rate in First Nations at 182 deaths per 100 000 is approaching the Canadian rate of 193 deaths per 100 000. From 1984–1988, the Canadian rate was 1.4 times higher.
- Deaths due to endocrine and immune disorders is 2.1 times higher in First Nations and in part may be attributed to the higher rate of diabetes and associated mortality in First Nations.

Table 6.4

Leading Causes of Death by Age Group

First Nations, 1991-1993 Combined

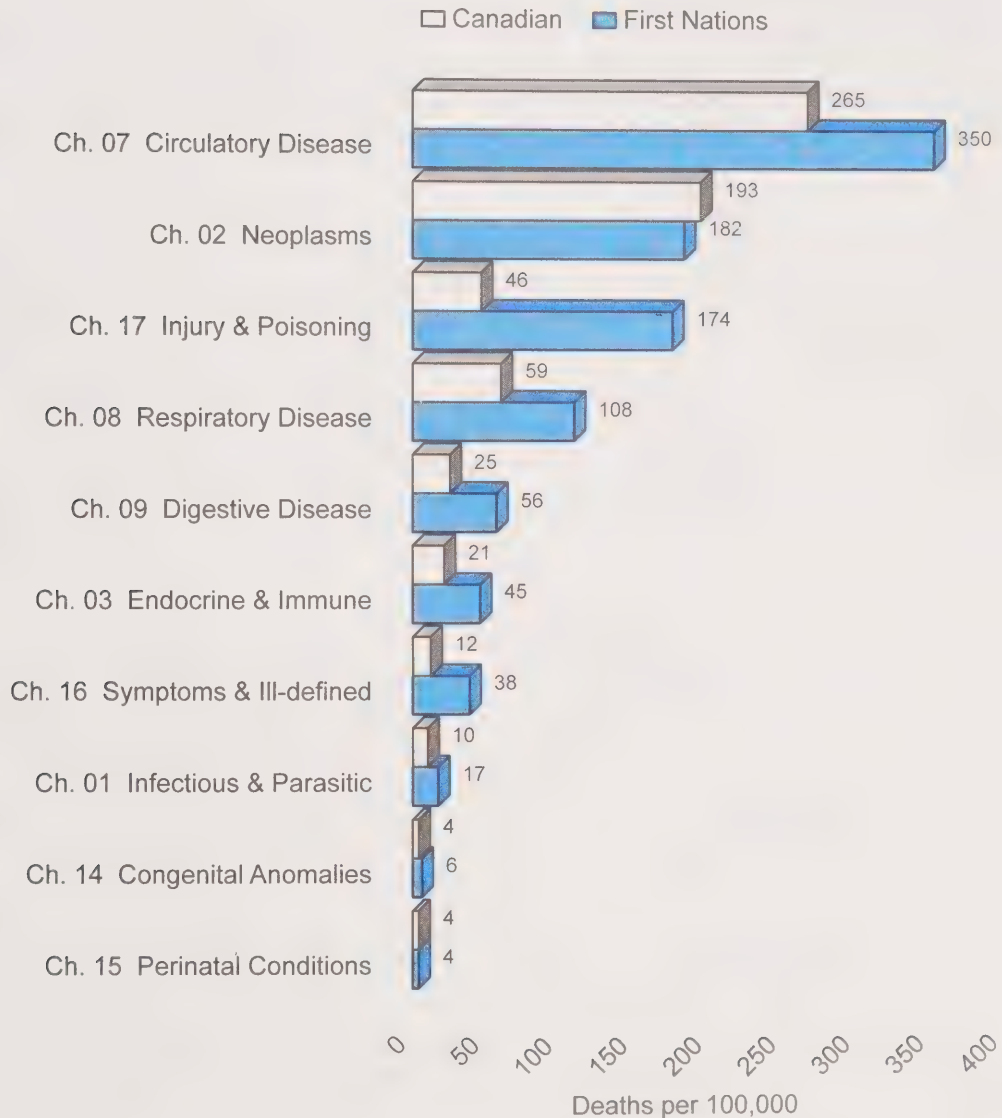
00-<01	01-14	15-24	25-44	45-64	65+
Symptoms & Ill-defined	Injury & Poisoning	Injury & Poisoning	Injury & Poisoning	Circulatory Disease	Circulatory Disease
Perinatal Conditions	Neoplasms	Symptoms & Ill-defined	Circulatory Disease	Neoplasms	Neoplasms
Congenital Anomalies	Congenital Anomalies	Neoplasms	Neoplasms	Injury & Poisoning	Respiratory Disease
Injury & Poisoning	Respiratory Disease	Circulatory Disease	Digestive Disease	Digestive Disease	Endocrine & Immune
Respiratory Disease	Infectious & Parasitic	Nervous System	Symptoms & Ill-defined	Respiratory Disease	Digestive Disease
Nervous System	Symptoms & Ill-defined	Respiratory Disease	Mental Disorders	Endocrine & Immune	Injury & Poisoning

Ranking based on average mortality (deaths per 100,000 population) in each age group for 1991-1993
Source: Medical Services Branch in-house statistics

Figure 6.3

Age-standardized Comparison of Leading Causes of Death

First Nations and Canadian Populations, 1991-1993



Ranking based on average mortality (deaths per 100,000 population) for First Nations population 1991-1993
Source: Medical Services Branch in-house statistics

- Deaths due to respiratory diseases, of which respiratory infections are a major component, are 1.8 times higher in First Nations. This is basically unchanged from the years 1984–1988. In regional studies throughout North America, Aboriginal people have been shown to have a higher risk of *Haemophilus influenza* pneumonia,²³ pneumonia or bronchitis during the first year of life,^{24,25} lower respiratory disease,²⁶ and upper and lower respiratory infections.²⁷
- The category of ill-defined conditions, which includes SIDS, is more than three times higher in First Nations.
- Infectious and parasitic disease mortality rates, which disproportionately affect children, are 1.7 times higher in the First Nations population. Diseases in this category that have been shown to disproportionately affect Aboriginal people include intestinal infections,²⁸ and tuberculosis.²⁹ First Nations communities also commonly experience outbreaks of hepatitis A.³⁰

Figure 6.4 presents an analysis of the average annual percentage change in age-standardized mortality rates (AAPC) from 1979–1993, for selected causes of death in First Nations populations. The process of age standardization permits comparisons between years, as it accounts for changes that have occurred over time in the age distribution of the population. As Figure 3.2 illustrated, in this 15-year period, the largest age category of the First Nations population has moved from children and youth to the 20 to 40 year-olds. Only those ICD-9 categories where there were in excess of 50 deaths per year were considered in this calculation to minimize random variation caused by small numbers of deaths annually. The average annual percentage change in rate gives a simple overview of the overall trend in mortality rates as it summarizes annual fluctuations.

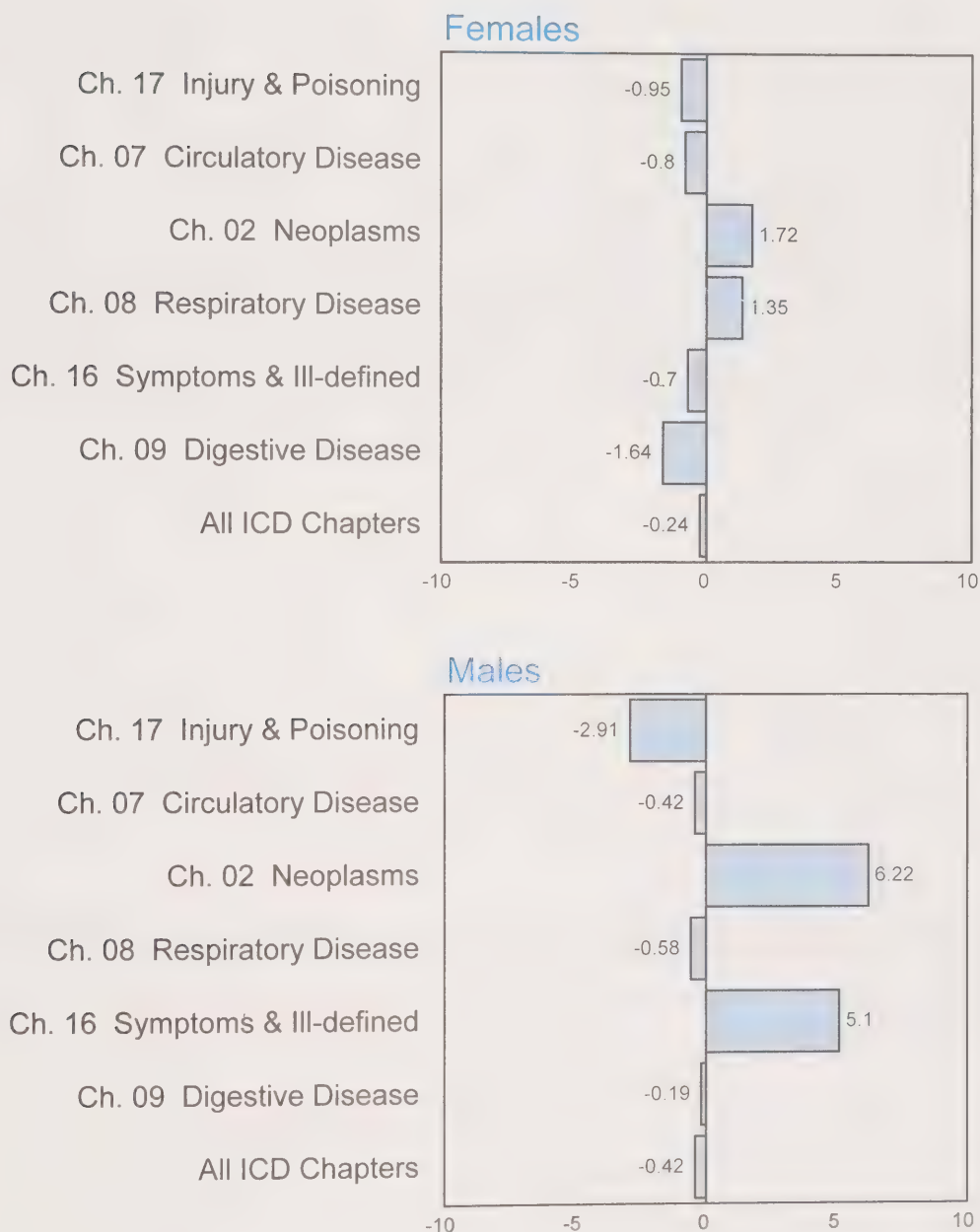
In females, the category of digestive diseases had an average annual decrease of 1.64 percent, followed by injury and poisoning (0.95 percent decrease), circulatory disease (0.80% decrease) and symptoms and ill-defined conditions (0.70 percent decrease). Neoplasms and respiratory disease had average annual increases of 1.72 percent and 1.35 percent respectively. Although the crude death rate of respiratory disease has dropped (Table 6.2), the high proportion of persons under 25 years of age where this disease is significant has meant that the age-standardized rate has shown an average annual increase.

First Nations males show a similar trend to females, with average annual decreases in injury and poisoning (2.91 percent decrease), circulatory disease (0.24 percent decrease) and digestive disease (0.19% decrease). Differences from the female population are observable in ill-defined conditions where an AAPC increase (5.10 percent) is seen, and with respiratory diseases where an AAPC decrease (0.58 percent) was obtained. Also the male AAPC for neoplasms has increased more dramatically than the female rate, with an increase of 5.10 percent.

For all ICD-9 chapters, First Nations males had a 0.42 percent decline in AAPC over the 15 years analyzed, with females showing a 0.24 percent decline.

Figure 6.4

Average Annual Percentage Change in Age-standardized Mortality for Selected Causes of Death *First Nations, by Gender 1979-1993*



Source: Medical Services Branch in-house statistics

6.6 Regional Patterns of Leading Causes of Death

As in the national analysis above, the three leading causes of death in all regions include injury and poisoning, circulatory system diseases, and neoplasms. As Figure 6.5 illustrates, from 1991–1993 these three categories accounted for a low of 59 percent of deaths in Manitoba to a high of 78 percent of all deaths in Yukon. Table 6.5 ranks the top five causes of death by region. Over the 1991–1993 period, injury and poisoning deaths were the leading causes in all regions except Atlantic and Ontario, where circulatory system diseases are ranked first. Neoplasms are the third cause of death in all regions except Yukon, where it is second. Diseases of the respiratory system are either the fourth or fifth cause of mortality in all the regions.

6.7 Potential Years of Life Lost

Potential years of life lost (PYLL) is a quantitative expression of the impact of premature death on a population as it is a summation of the number of years of life lost when individuals do not live to their estimated life expectancy.

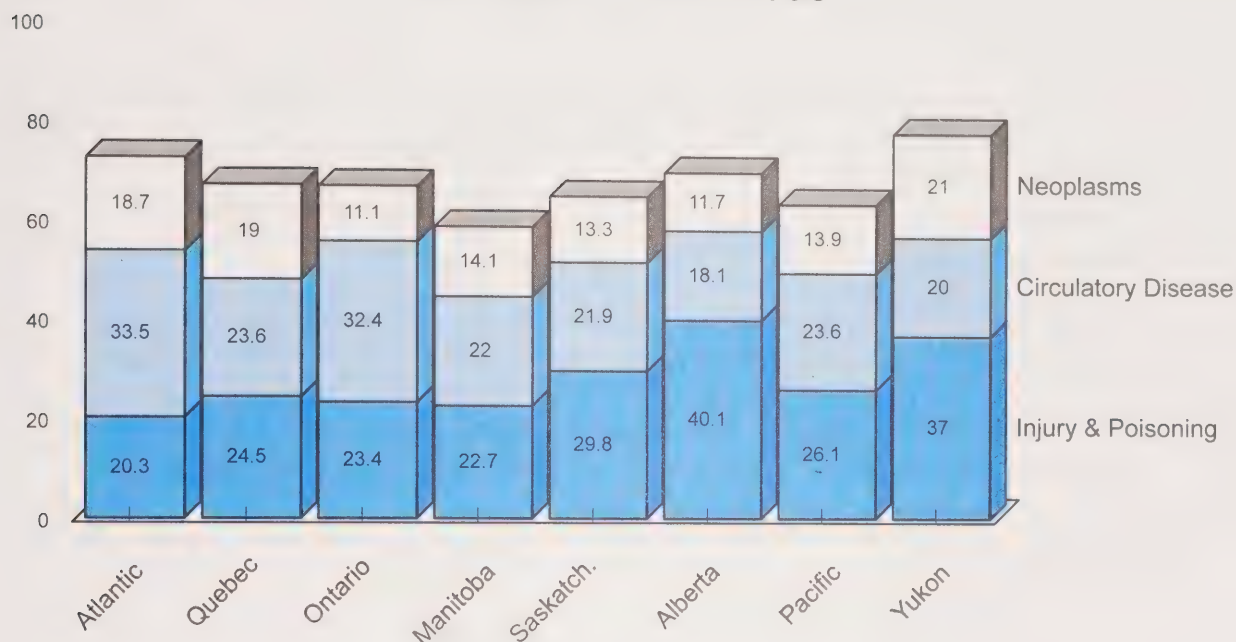
In 1993 there were 46 037 potential years of life lost in the First Nations population: 21 906 among females and 25 031 among males. The causes of PYLL by cause are ranked in Figure 6.6. This shows that in 1993, injury and poisoning accounted for 55.0 percent or 25 795 potential years of life lost in Canadian First Nations. Ill-defined symptoms accounted for the second highest PYLL at 4548 years, in large part due to the number of SIDS-related deaths in infancy. For females, the next leading causes of PYLL are neoplasms at 2176 years. This is almost five times the PYLL due to neoplasms in males (442 years). The magnitude of this premature mortality is related to the commonness of cancers and the early apparition of certain types of cancer. For example, in the Canadian population, the potential years of life lost due to breast cancer in women far exceeds the potential years of life lost to prostate cancer in men. This reflects the young age at which women die from breast cancer, as well as the higher life expectancy of women, and hence greater years lost.³¹

The category of congenital anomalies is the third highest PYLL in males and is ranked fourth in females. This is followed by perinatal conditions in both sexes. The ranking of these two categories underscores the magnitude of infant mortality among First Nations and the impact it has on this population.

Figure 6.5

Leading Causes of Death by Region as a Percentage of Total Deaths

First Nations 1991-1993



Source: Medical Services Branch in-house statistics

Table 6.5

Leading Causes of Death by Region Ranked as a Percentage of Total Deaths

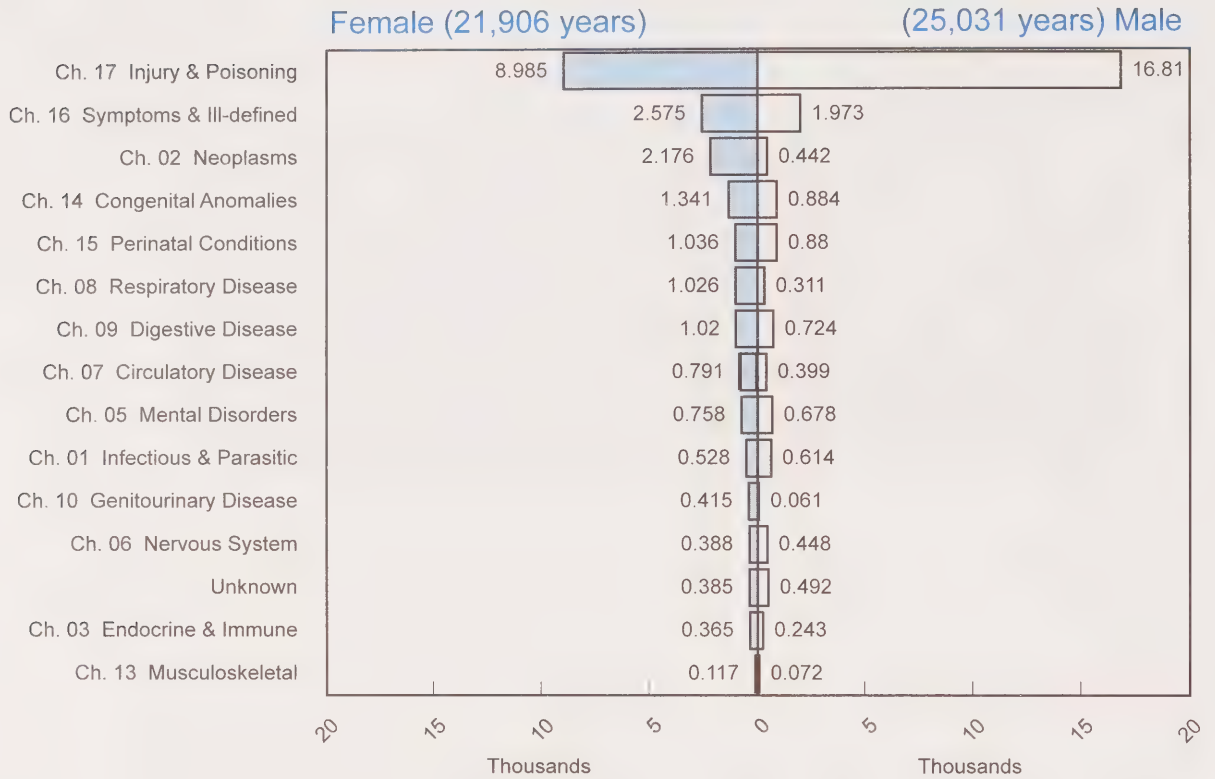
First Nations, 1991-1993

Rank	Atlantic	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Pacific	Yukon
1	Circulatory Disease	Injury & Poisoning	Circulatory Disease	Injury & Poisoning	Injury & Poisoning	Injury & Poisoning	Injury & Poisoning	Injury & Poisoning
2	Injury & Poisoning	Circulatory Disease	Injury & Poisoning	Circulatory Disease	Circulatory Disease	Circulatory Disease	Circulatory Disease	Neoplasms
3	Neoplasms	Neoplasms	Neoplasms	Neoplasms	Neoplasms	Neoplasms	Neoplasms	Circulatory Disease
4	Respiratory Disease	Respiratory Disease	Unknown	Symptoms & Ill-defined	Respiratory Disease	Respiratory Disease	Respiratory Disease	Respiratory Disease
5	Digestive Disease	Unknown	Respiratory Disease	Respiratory Disease	Digestive Disease	Digestive Disease	Symptoms & Ill-defined	Infectious & Parasitic

The "Unknown" category refers to deaths where no ICD-9 cause of death was known or provided
Source: Medical Services Branch in-house statistics

Figure 6.6

Leading Causes of Potential Years of Life Lost *First Nations, Male and Female, 1993*



The "Unknown" category refers to deaths where no ICD-9 cause of death was known or provided

Source: Medical Services Branch in-house statistics; estimate for life expectancy at birth based on data from the Department of Indian Affairs & Northern Development

7.0 DEATHS DUE TO INJURY AND POISONING

Highlights

- Injuries and poisonings are the most significant cause of death among First Nations people, and represent the greatest opportunity for prevention strategies.
- Deaths from injury and poisoning are twice as common among men as among women.
- The most common causes of death from injury over the 1979–1993 period were motor vehicle accidents, suicide, and accidental drug overdose.
- Rates of death from most types of injury decreased from 1979 to 1993. The exceptions were suicide rates and drug overdose.

7.1 Causes of Deaths due to Injury and Poisoning

Aside from poor socioeconomic circumstances, First Nations people are suffering from cultural alienation or cultural stress. This is caused by oppressive experiences such as “loss of identity, loss of control over living conditions, restricted economic opportunity, suppression of beliefs and spirituality, weakening of social institutions, displacement of political institutions, pervasive breakdown of cultural values and diminished esteem, discrimination and institutional racism and their internalized effects, and voluntary or involuntary adoption of elements of an external culture and loss of identity.”³²

Cultural alienation may be expressed through suicide, drug and alcohol abuse, and mental illness. Injuries and poisonings are the most significant cause of death in First Nations, and represent the greatest opportunities for prevention strategies. Table 7.1 provides a detailed breakdown of the category of injury and poisoning deaths by rate, for the three-year averages from 1979–1993. The most common causes of death in this category in 1991–1993 were motor vehicle accidents (40.5 deaths per 100 000 population), followed by suicides (38.0), and poisoning/drug overdose (16.5).

The decreased First Nations mortality rate detailed in Table 6.1 (above) for this category has been due to improvements in the rates of death from motor vehicle accidents (39.4 percent improvement from 1979–1981 to 1991–1993), drowning (56.8 percent improvement), fires (44.3 percent improvement) and firearms (78.3 percent improvement). The death rate due to suicide has been stable more than the period, and the poisoning/drug overdose death rate has increased over two-fold.

Approximately half of all injury and poisoning deaths in 1991–1993 were caused by motor vehicle accidents and suicides (Figure 7.1). More than twice as many injury and poisoning deaths occurred with males as with females. Although suicide was less prevalent with females (20.7 percent compared with 26.3 percent in males), more females died by poisoning/drug overdoses. Males were more likely than females to die by drowning.

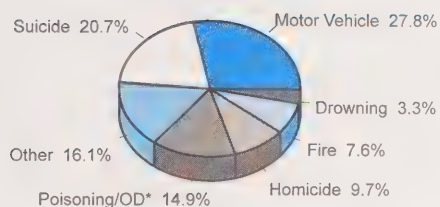
Figure 7.2 looks more closely at the age-specific mortality rates from injury and poisoning causes in the two five-year time periods 1979–1983 and 1989–1993. Five-year averages are used to minimize rate variations due to a small annual number of deaths in some of the categories:

- Motor vehicle accident rates have improved marginally in all age categories. The highest rate in both time periods is seen in the 15 to 24 age group.
- Suicide death rates have increased in the 1 to 14 age group by 44.8 percent. All other age categories have recorded marginal improvements, except the 65 plus age group, however only a small number of deaths occurred in this group. The majority of suicides occur in the 15 to 24 age group (80.7 deaths per 100 000 population in 1989–1993), followed by the 25–44 age group (49.9 deaths per 100 000 population).
- When compared with the period 1979–1983, death rates by fire in 1989–1993 have decreased in all age categories, except for infants, where death rates have increased. However, again, only a small number of deaths occurred in the infant group. In general, except for childhood, fire death rates are associated with increasing age.
- An improvement in drowning death rates has been obtained in all age groups. The highest rates occur in the 25 to 64 year age group.
- The mortality rate of falls, almost totally related to aging, has improved in ages 25 years and older. Marginal gains have been obtained in the 65 plus age group (56.9 deaths per 100 000 population in 1989–1993).
- Persons aged 25 to 64 comprise for the majority of poisoning/drug overdose deaths. These rates have increased significantly in the 65 plus age group (3.6 times), the 45 to 64 age group (2.6 times), and the 25 to 44 age group (1.8 times).

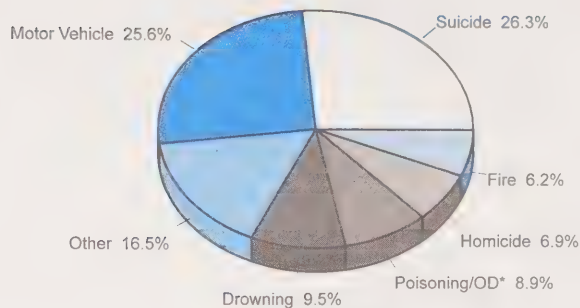
Figure 7.1

Percent Injury and Poisoning Deaths by Cause and Gender First Nations, 1991-1993

Females
(n=579)



Males
(n=1367)



* Note: OD = overdose

Note: "Other" category includes suffocation, exposure, falls, firearms, industrial accident and aircraft crash
Source: Medical Services Branch in-house statistics

Table 7.1

Death Rates* Due to Injury & Poisoning by Cause First Nations, Three-year Averages 1979-1993

Category of Injury/Poisoning	1979-1981	1982-1984	1985-1987	1988-1990	1991-1993
Motor Vehicle	66.8	46.4	62.6	46.3	40.5
Suicide	38.2	35.8	36.6	32.7	38.0
Other	66.2	53.2	34.7	34.8	30.3
Poisoning/OD**	6.9	7.2	9.3	10.8	16.5
Drowning	27.3	17.3	14.5	12.6	11.8
Fire	18.3	17.1	13.0	10.3	10.2
Falls	8.1	7.1	5.2	6.3	4.6
Firearms	10.6	5.6	6.0	3.3	2.3

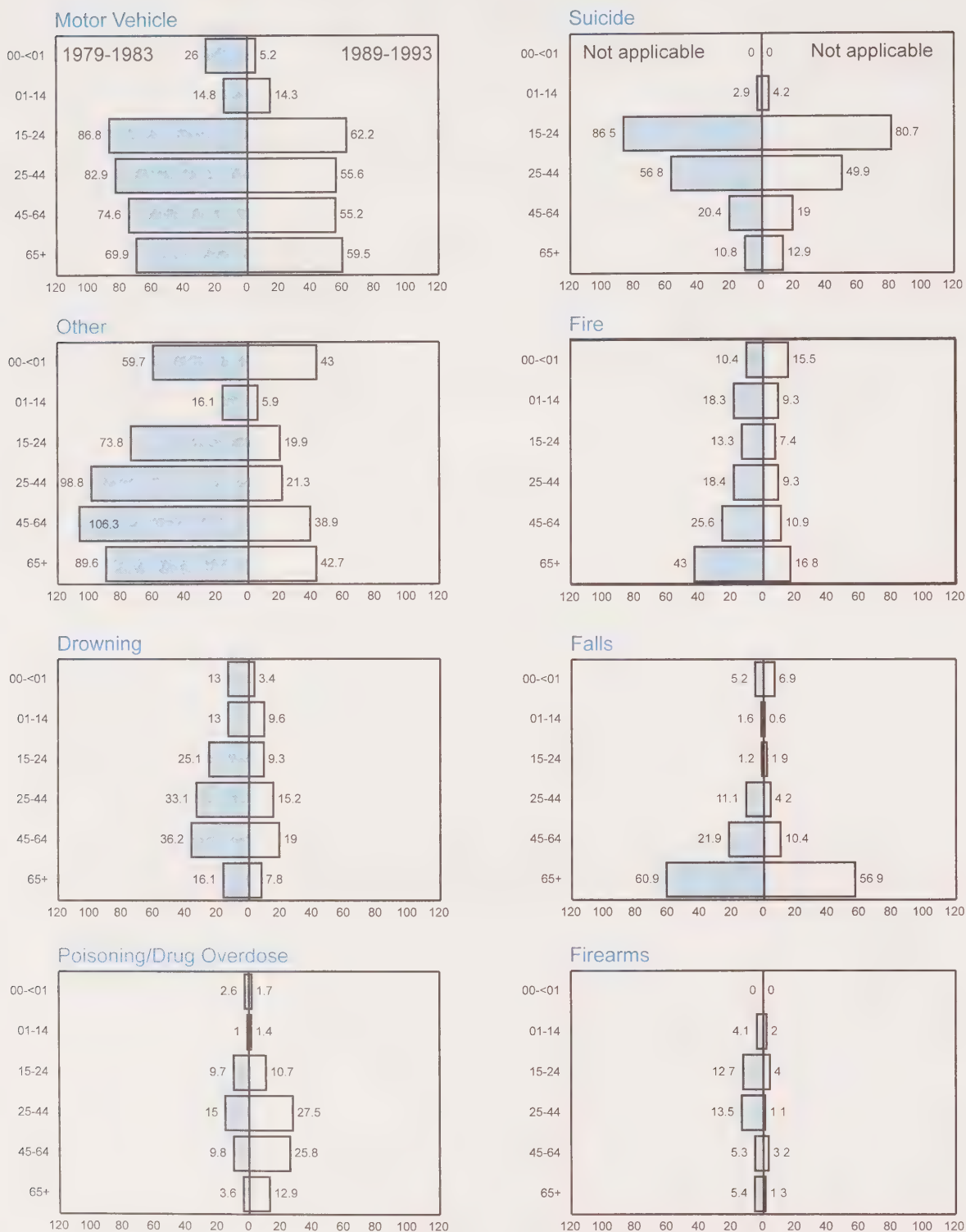
* Deaths per 100,000 population

** Note: OD = overdose

Note: "Other" category includes suffocation, exposure, homicide, industrial accident and aircraft crash

Source: Medical Services Branch in-house statistics

Figure 7.2
Injury and Poisoning Rates by Cause and Age Group*
First Nations, 1979-1983 and 1989-1993



* Deaths per 100,000 population
 Note: "Other" category includes suffocation, exposure, industrial accident and aircraft crash
 Source: Medical Services Branch in-house statistics

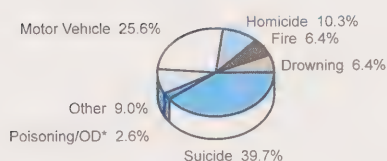
7.2 Regional Profile

Figure 7.3 presents a breakdown of the injury and poisoning deaths by cause for the eight First Nations regions. As always, these comparisons must be interpreted with caution, because the regions collect their data in different ways and for different populations (for example, some regions only count people living in First Nations communities, while others count all First Nations people, regardless of residence). Motor vehicle accidents were the largest cause of injury and poisoning deaths, followed by suicide in: the Manitoba, Saskatchewan, Alberta, and Pacific regions. In the Atlantic, Québec and Ontario regions, death by suicide surpassed motor vehicle deaths as the single greatest cause of death in this ICD-9 category. In the Yukon region, poisoning/drug overdose was the leading cause of death, followed by motor vehicle accidents.

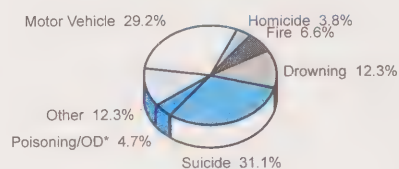
The third leading cause of death in regions was: drowning in Ontario and Québec; homicide in the Atlantic, Manitoba and Saskatchewan regions; poisoning in Alberta and Pacific; and suicide in the Yukon.

Figure 7.3
Regional Injury and Poisoning Deaths by Cause
First Nations, 1989-1993

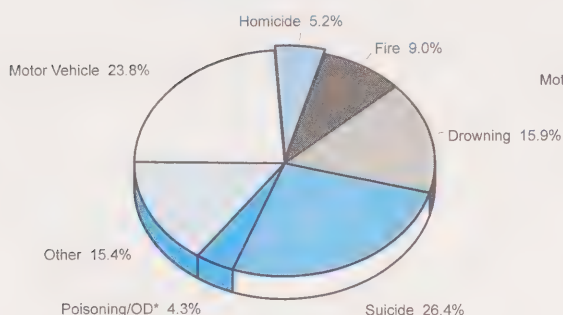
Atlantic (n=78)



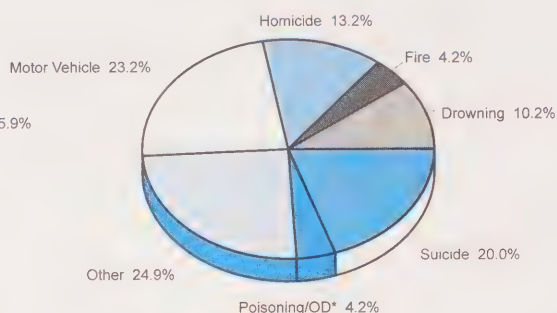
Quebec (n=106)



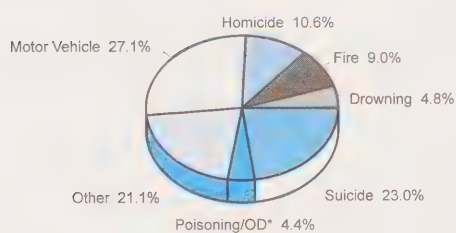
Ontario (n=421)



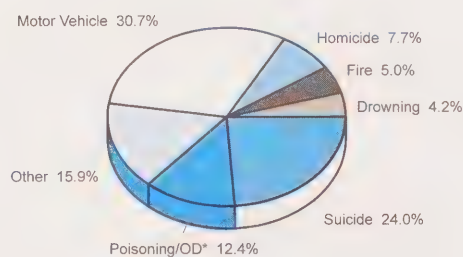
Manitoba (n=401)



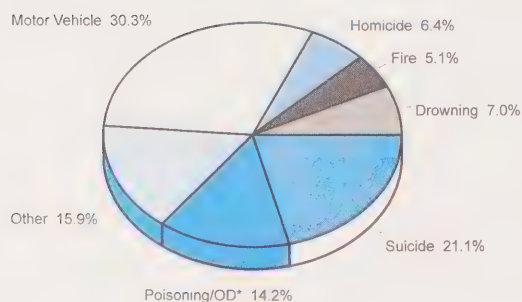
Saskatchewan (n=479)



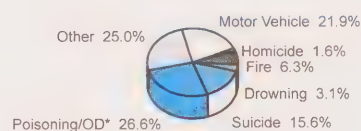
Alberta (n=659)



Pacific (n=908)



Yukon (n=64)



* Note: OD = overdose

Note: "Other" category includes suffocation, exposure, falls, firearms, industrial accident and aircraft crash

Source: Medical Services Branch in-house statistics

8.0 DEATHS DUE TO SUICIDE

Highlights

- Among all the disparities between First Nations and Canadians with respect to mortality, suicide ranks as one of the largest. Suicide rates among First Nations men are 2.6 times higher than for Canadian men in general; among First Nations women, they are 4 times higher than average.
- The differences are most extreme in the younger age groups. For example, among First Nations people age 15-24, rates ranged from 5 to 8 times the national average over the 1989–1993 period. At older ages, the gap between the two populations narrows.
- Among First Nations men, the suicide rate has remained fairly constant over the 1979–1993 period. The trend for women is less clear, but there is no indication of a declining rate.

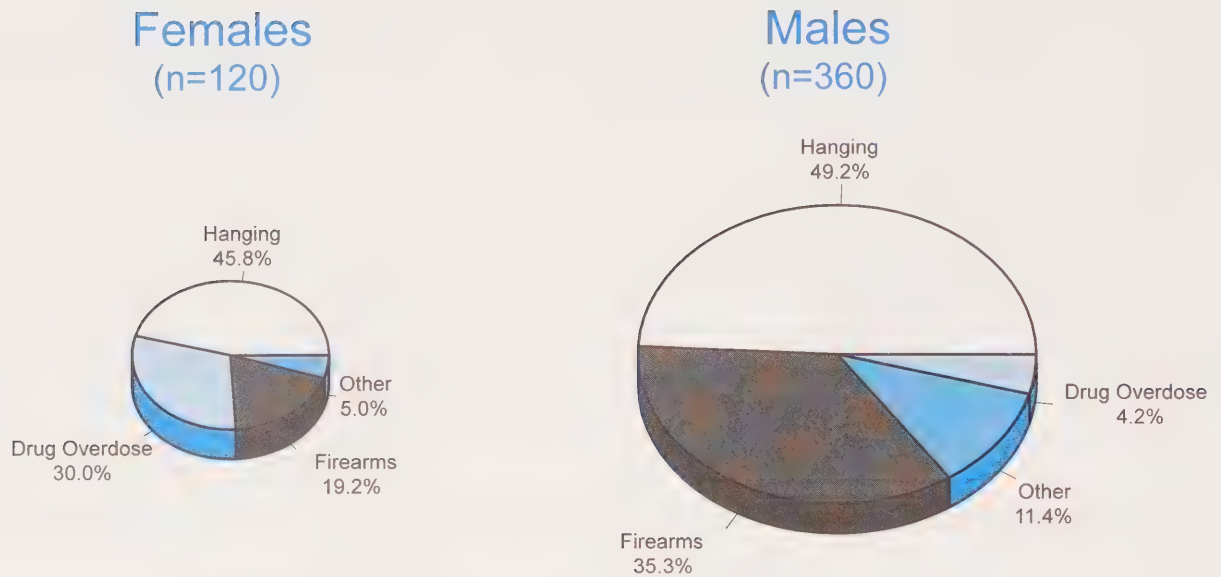
Perhaps the most convincing indicator of the effect of poor social conditions and cultural stress in First Nations is the suicide rate in this population, particularly among the youth. Suicide rates are always hard to interpret, as suicides tend to happen in clusters that are obscured by national or regional rates. Many suicides go unreported and unsuccessful suicide attempts are not included in mortality statistics.

8.1 Suicide Rates by Cause

As the overview in Figure 7.2 has shown, age-specific suicide rates have shown small decreases in the age categories where the majority of these deaths occur. Hanging is the most common method of suicide by both males and females, accounting for more than 45 percent of all deaths during 1991–1993 (Figure 8.1). However, males are more likely to commit suicide by firearms (35.3 percent), whereas drug overdose is the method in 30.0 percent of female suicides.

Figure 8.1

*Percent Suicide Deaths
by Cause and Gender
First Nations, 1991-1993*



Source: Medical Services Branch in-house statistics

8.2 Age and Population-related Suicide Rates

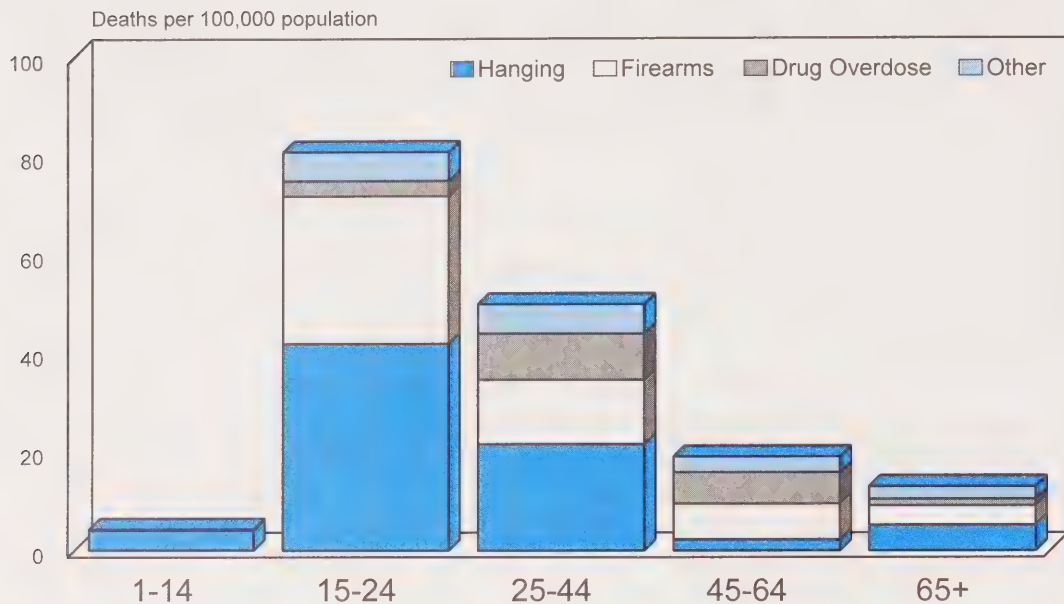
Figure 8.2 provides a comparison of the methods of suicide by rate and age categories for 1989–1993. Hanging is almost exclusively the method of suicide among children 14 years and younger. This remains the most common method for persons aged 15 to 44 years of age, with rates from 21.5 to 41.5 deaths per 100 000. Death by firearms is the second most common method in this age group. For persons 45 to 64 years of age, death rates due to firearms and drug overdoses are greater than the hanging death rate.

Among all the disparities between First Nations and Canadian populations with respect to mortality, suicide ranks as one of the largest. Figure 8.3 presents crude suicide rates for First Nations and Canadian people by gender for 1979–1993. The annual rates for First Nations tend to fluctuate widely, and there is no definite indication of a declining trend. In 1993 the First Nations suicide rate for females was 21.6 deaths per 100 000, which is the second highest annual rate in the 15 years analyzed, and is more than twice the lowest rate obtained in 1984 (Table 8.2). It is also more than four times the rate of suicide in the Canadian female population. Where the Canadian female rate has declined since 1979, a similar improvement has not been seen in their First Nations counterparts.

The First Nations suicide rate for males in 1993 was 53.1 deaths per 100 000 population, 2.6 times the Canadian male rate (Table 8.2). The differences between these two populations have remained constant during the period 1979–1993, as neither population has seen improvements. These differences are more striking using age-specific comparisons (Figure 8.4). During the years 1989–1993, the Canadian suicide rate among persons younger than 15 years was zero, compared with rates averaging four deaths per 100 000 in the First Nations population (Table 8.3). For persons aged 15 to 24, the suicide rate of First Nations females at 35.0 deaths per 100 000 was almost eight times the Canadian female rate, and for males, the First Nations rate was 125.7 deaths per 100 000, resulting in a difference of over five-fold compared with the male Canadian rate. For persons aged 25 to 34, this disparity is reduced to 4.5 times greater for First Nations females and 3.5 times greater for First Nations males. The differences between Canadian and First Nations rates disappear with age, and by 65 plus, the Canadian rate has exceeded that of the First Nations population.

Figure 8.2

Suicide Deaths by Age Group and Method *First Nations 1989-1993*



Source: Medical Services Branch in-house statistics

Table 8.1

Suicide Death Rates by Age Group and Method* *First Nations, 1989-1993*

Age Group	Hanging		Firearms		Drug Overdose		Other	
	Rate*	Number	Rate*	Number	Rate*	Number	Rate*	Number
1-14	4.1	26	0.2	1	0.0	0	0.0	0
15-24	41.8	176	29.9	126	3.1	13	5.9	25
25-44	21.5	132	13.0	80	9.3	57	6.0	37
45-64	2.3	5	7.2	16	6.3	14	3.2	7
65+	5.2	4	3.9	3	1.3	1	2.6	2

* Deaths per 100,000 population

Source: Medical Services Branch in-house statistics

Figure 8.3

Suicide Death Rates

First Nations and Canadian Populations, 1979-1993

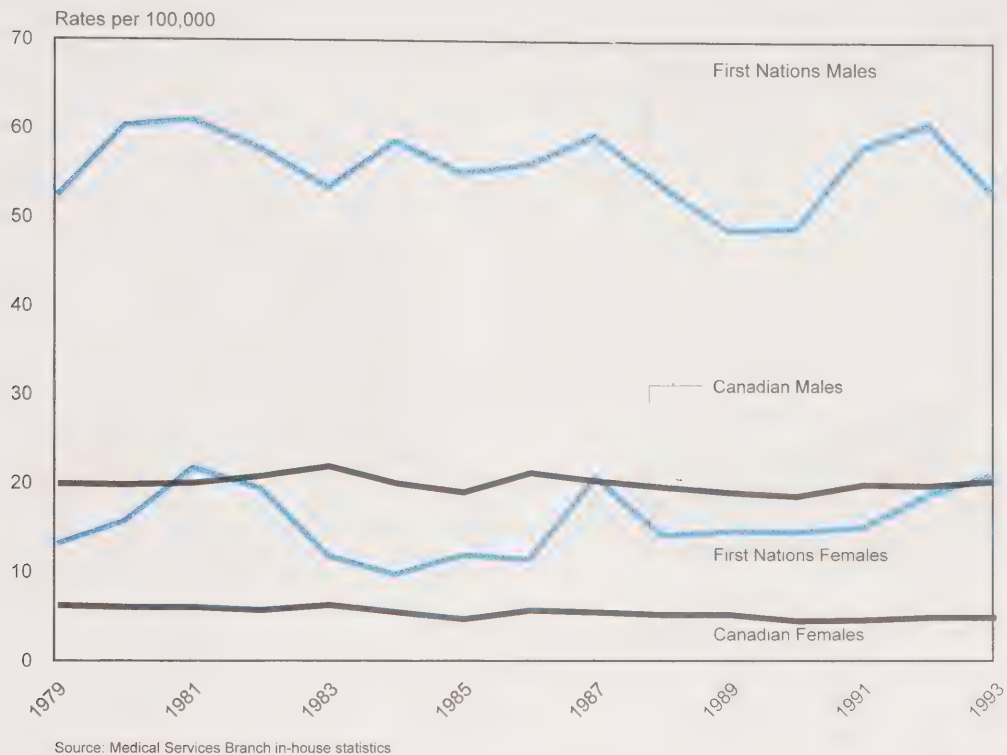


Table 8.2

*Suicide Death Rates**

First Nations and Canadian Populations, 1979-1993

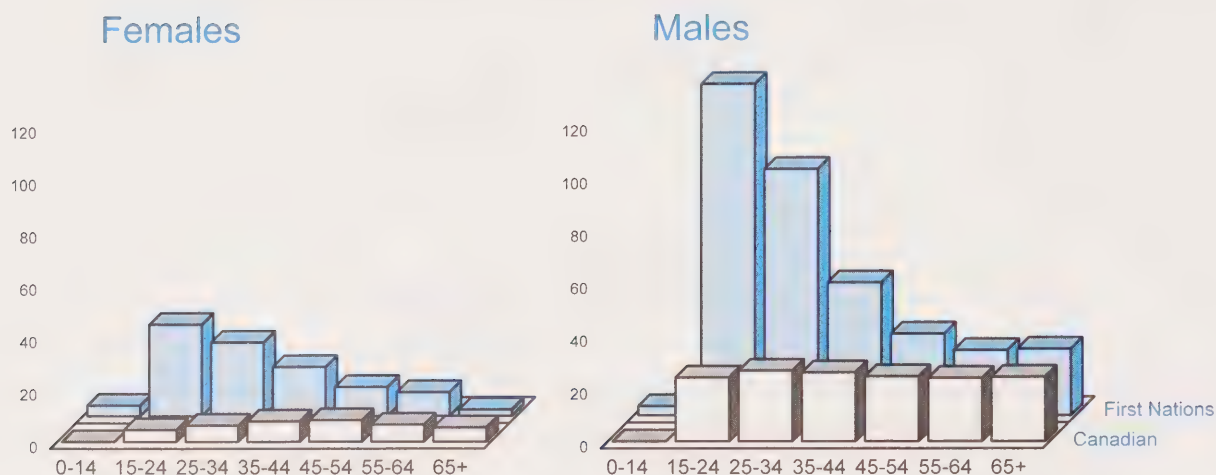
Year	Canada Female	First Nations Female	Canada Male	First Nations Male
1979	6.6	13.6	20.3	52.8
1980	6.4	16.2	20.2	60.8
1981	6.4	22.2	20.4	61.4
1982	6.1	19.9	21.2	58.2
1983	6.7	12.3	22.3	53.8
1984	5.9	10.2	20.4	59.1
1985	5.1	12.4	19.4	55.5
1986	6.1	11.9	21.6	56.5
1987	5.9	21.2	20.7	59.8
1988	5.6	14.6	20.0	54.2
1989	5.6	15.1	19.4	49.1
1990	4.9	15.0	19.0	49.3
1991	5.0	15.5	20.3	58.5
1992	5.3	19.2	20.2	61.2
1993	5.3	21.6	20.7	53.1

* Deaths per 100,000 population
Source: Medical Services Branch in-house statistics

Figure 8.4

Suicide Death Rates by Age Group*

First Nations and Canadian Populations, 1989-1993



* Deaths per 100,000 population
Source: Medical Services Branch in-house statistics

Table 8.3

Suicide Death Rates by Age Group*

First Nations and Canadian Populations, 1989-1993

Age Group	First Nations Female	Canada Female	First Nations Male	Population Canada Male
0-14	4.1	0.0	3.6	0.0
15-24	35.0	4.5	125.7	24.1
25-34	28.1	6.2	93.3	26.7
35-44	18.8	7.8	50.3	26.0
45-54	11.1	8.2	30.9	24.5
55-64	9.1	6.5	24.7	23.9
65+	2.4	5.4	25.2	24.3

* Deaths per 100,000 population
Source: Medical Services Branch in-house statistics

8.3 Regional Profiles

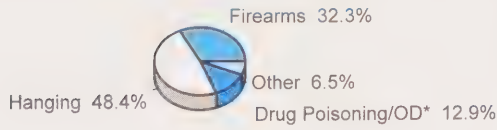
Figure 8.5 compares the eight regions in terms of the causes of suicide for 1989–1993. Despite the differences in how each region collects data, the regional results in general are similar to the national results presented in Figure 8.1. Hanging was the principal method of suicide in seven of the eight regions. The following differences are seen among the regions:

- Yukon reported no deaths by hanging or overdose.
- Québec reported no deaths by drug overdose.

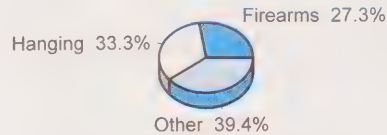
Figure 8.5

Regional Suicide Deaths by Cause First Nations, 1989-1993

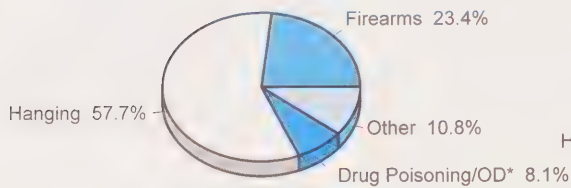
Atlantic (n=31)



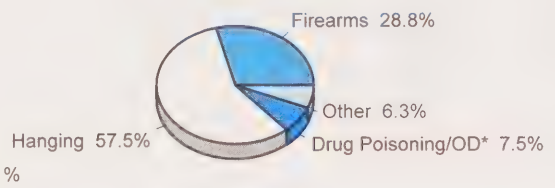
Quebec (n=33)



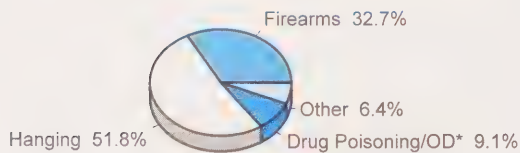
Ontario (n=111)



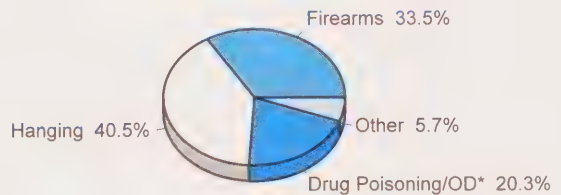
Manitoba (n=80)



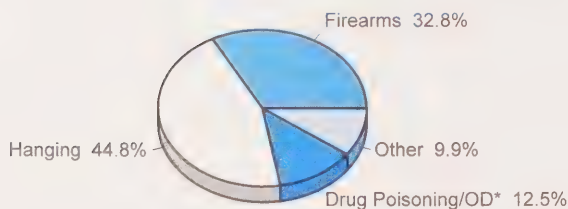
Saskatchewan (n=110)



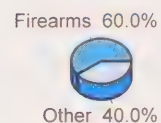
Alberta (n=158)



Pacific (n=192)



Yukon (n=10)



* Note: OD = overdose
Source: Medical Services Branch in-house statistics

9.0 CONTRIBUTIONS TO IMPROVEMENTS IN MORTALITY RATES

Highlights

- The improvements in mortality described in this document are due in large part to decreasing death rates among people aged 25-44. More than 60 percent of the overall improvement is attributable to decreases in the rates of death from injury and poisoning.

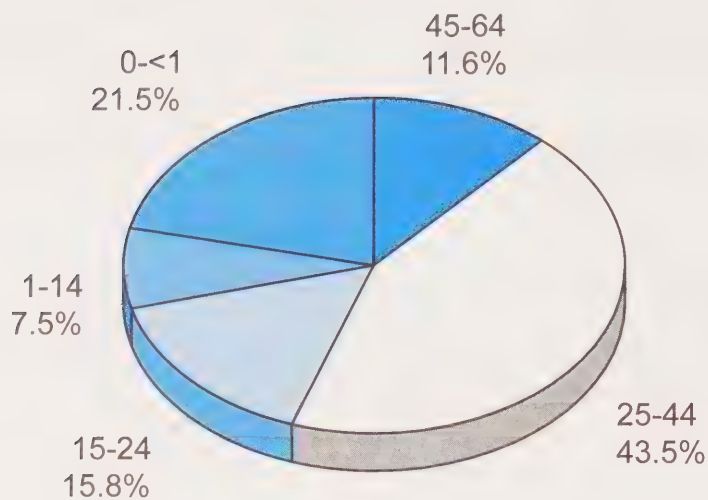
In Figure 9.1, crude mortality rates in 1979 and 1993 have been analyzed to determine which ages have had the greatest positive impact in reducing mortality rates. The greatest improvements in mortality and therefore contributors to increases in life expectancy (as expressed through numbers of deaths averted in the 1993 population) were obtained in the 25 to 44 year old population (43.5 percent of deaths averted), followed by infants (21.5 percent) and the 15 to 24 year old population (15.8 percent).

Figure 9.2 uses five-year averages to investigate which ICD-9 chapters had the greatest contributions to improvement in mortality rates. Five-year averages were used to minimize the fluctuation caused by small numbers in some chapters. This analysis has shown the impact of the reduction in injury and poisoning mortality rates, as this chapter alone was responsible for 60.9 percent of the deaths averted in 1989–1993 when 1989–1993 rates are compared to 1979–1983 rates. By chapter, the next largest contributors were circulatory diseases (12.7 percent of deaths averted), perinatal conditions (9.1 percent) and diseases of the digestive tract (7.3 percent).

Figure 9.1

Contributions to Improvements in Mortality Rates by Age Group

First Nations, 1979-1993

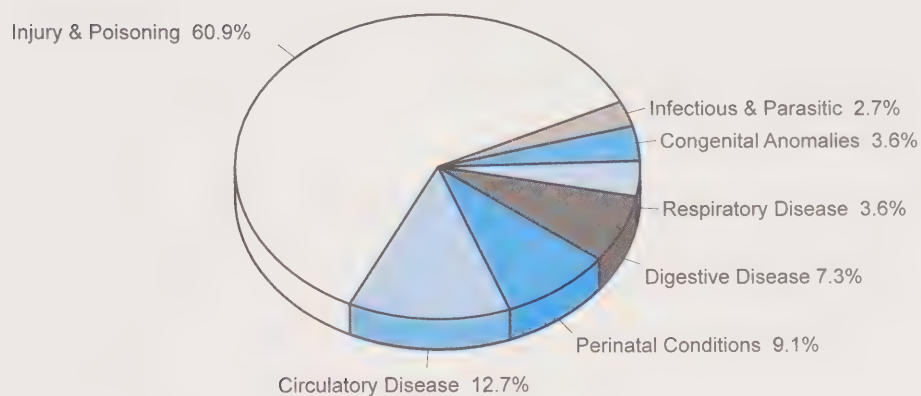


Source: Medical Services Branch in-house statistics

Figure 9.2

Contributions to Improvements in Mortality Rates by ICD Main Chapter

First Nations, For Time Periods 1979-1983 and 1989-1993



Source: Medical Services Branch in-house statistics

10.0 CONCLUSION

First Nations mortality rates have improved significantly over the 15-year period 1979–1993. Compared with the Canadian population, the age-standardized general mortality rate reveals, however, that the gap between First Nations and Canadian mortality rates has remained the same. The average annual change in age-standardized mortality rates shows that for all causes of death, the male First Nations rate improved about 0.8 percent a year, and the female First Nations rate improved about 0.4 percent a year.

The substantial infant mortality gains experienced between 1979 and 1993 were primarily in the neonatal time period. Less improvement is seen in the post-neonatal period where socioeconomic and environmental conditions become important variables in mortality. SIDS is now the leading cause of death in infants, despite a significant reduction in the rate of death from this cause.

The decrease in injury and poisoning rates is the greatest contributor to the gains in health status reported in this analysis, responsible for more than 60 percent of all deaths averted in 1989–1993 when the 1989–1993 rates are compared to 1979–1983 rates. Not coincidentally, when the 1993 age-specific mortality rates are compared with the 1979 rates, the 25 to 44 year-old population is the group in which the greatest number of deaths were averted, as injury and poisoning have historically been the leading causes of death for persons 1 to 44 years old. However, injury and poisoning still account for the majority of deaths of First Nations people, and in 1993, 55 percent or over 26 000 potential years of life were lost due to premature deaths in this category.

Injury and poisoning deaths are primarily due to motor vehicle accidents, suicides, and accidental poisoning/overdoses. Suicide and overdoses are alone among the causes of injury and poisoning deaths in not showing substantial improvements over the 15-year period. Suicide rates in all ages, but particularly in First Nations youth, are many times higher than comparable Canadian age groups.

As First Nations people age, diseases of the circulatory system, neoplasms, and endocrine/immune system disorders assume increasing importance as causes of mortality. The incidence of cancer in women and the young age at which cancer deaths often occur has meant that this disease is responsible for the third highest potential years of life lost for First Nations females.

Neoplasms are the only major category of disease where the First Nations mortality rate is increasing, and the only major category where the age-standardized First Nations rate has not equalled or surpassed the Canadian rate. Although improvements have been seen in other leading causes of death, including injury and poisoning, and diseases of the circulatory, respiratory, and digestive systems, these rates remain substantially above Canadian rates.

The trends revealed in this report provide a clear direction to First Nations people, policy makers, and health-care professionals, when focusing their efforts to improve First Nations health status. Suicide rates, the bellwether of community well-being, remain high and send a powerful signal about the devastating effects of poor living conditions and lack of economic opportunity in First Nations communities, and the limitations of the Canadian health-care system alone in addressing health needs. The bench mark of Canadian health status has not yet been reached and this fact highlights the reality that improvements to date are only signposts in the journey to the betterment of First Nation's physical, mental and spiritual well-being.

GLOSSARY AND METHODOLOGY

Crude Mortality Rate

The number of deaths during a year, expressed either as a rate per 1000 or a rate per 100 000 in the population

Age-specific Mortality Rate

The number of deaths occurring in a year, expressed as a rate per 1000 in a given age group.

Age-standardized Mortality Rate

The number of deaths per 1000 that would have occurred in the standard population (1991 Canadian population) if the actual age-specific rates observed in a given population (i.e., First Nations) had prevailed in the standard population.

Moving Rates (or Three-year Moving Averages)

Moving rates are used in graphic presentation of data to minimize year-to-year fluctuations in order to highlight time-associated trends. The average rate for successive three-year periods is determined. For example, in a graphic analysis of rates for the years 1979–1993, the 1979–1991 average rate is determined and plotted as the 1980 value, the 1980–1982 average rate is determined and plotted as the 1981 value, and so forth.

Average Annual Percent Change in Age-standardized Mortality Rate (AAPC)

The average annual percent change in the age-standardized rate for the years 1979–1993 was calculated using a linear model of the annual percent changes of the moving mortality rate. Moving mortality rates were used to minimize the year-to-year fluctuation seen in small populations. The slope obtained from this model represents the average annual percentage increase or decrease of the mortality rate.

ICD-9

This is ninth revision of the International Classification of Diseases.³³

Life Expectancy at Birth

This is average number of years a newborn infant can be expected to live if current mortality rates continue to apply. Life expectancy is not a rate, rather it is a hypothetical measure and a reflection of current health and mortality conditions.³⁴

Potential Years of Life Lost

Potential years of life lost (PYLL) is a quantitative expression of the impact of premature death on a population, as it is a summation of the numbers of years of life lost when individuals do not live to their estimated life expectancy.

PYLL was calculated by obtaining the number of deaths from birth to 1, 1-4, 5-9, 10-14, ..., 80 plus for First Nations in 1993, and life expectancy at the mid-points of each age group. The total numbers of potential years of life lost is calculated by multiplying, for each age group, the number of deaths by the life expectancy of survivors.³⁵

Contributions to Improvements in Mortality Rate

This calculation estimates the impacts of declining mortality rates by age or cause. In a comparison of the 1979 and 1993 periods to determine which age groups contributed the most to reductions in mortality rate, the difference of the 1979 and 1993 rates for each age group was determined, then multiplied by the population in each age group in 1993 to obtain the numbers of deaths averted in each age group. These numbers were summed to give the total number of deaths averted, and the percentage of averted deaths in each age group was determined.

To calculate the contributions of cause of death on improvements in mortality rate, the same methodology as above was used except for the time periods considered. As the annual number of deaths in some ICD-9 categories is small, the time period 1979–83 was compared to 1989–1993.

ENDNOTES

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4. The population used in the construction of the age pyramid in Figure 3.2 is from the Medical Services Branch database described in Table 1.1.
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6. Department of Indian Affairs and Northern Development. *Comparison of Social Conditions of Registered Indians to the General Canadian Population*. (information brochure). Ottawa, 1995.
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8. See note 7 above.
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19. For a summary of research, see note 13, pp. 145-168.
20. Mao, Y. H. Morrison, R. Semenciw, and D. Wigle. "Mortality on Canadian Indian Reserves: 1976-1983." *Canadian Journal of Public Health*, Vol 77, 1986: 263-268.
21. The references to 1984-88 age-standardized rate comparisons in this section have been obtained from Muir, 1990 (see note 1 above).
22. See note 20.
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28. See note 13, p. 57 (table 3.1).
29. Enarson. D.A. and S. Grzybowski. "Incidence of active tuberculosis in the Native population of Canada." *Canadian Medical Association Journal*. Vol 134. 1986: 1149-1152.

30. See note 13, p. 79.
31. National Cancer Institute of Canada, *Canadian Cancer Statistics, 1996*. Toronto: 1996, p. 52.
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APPENDICES

Population Distribution 1979

*First Nations Population Included in Medical Services Branch Data
and Total Canadian Population*

Age Group	First Nations 1979		Canada 1979	
	Population	Percent	Population	Percent
80+	2,157	0.8	425,063	1.8
75-79	2,061	0.8	407,338	1.7
70-74	2,899	1.1	595,657	2.5
65-69	3,824	1.4	805,836	3.3
60-64	4,294	1.6	930,920	3.8
55-59	5,617	2.1	1,158,158	4.8
50-54	6,791	2.5	1,232,477	5.1
45-49	8,465	3.2	1,277,701	5.3
40-44	10,053	3.7	1,301,867	5.4
35-39	12,376	4.6	1,544,740	6.4
30-34	16,080	6.0	1,950,580	8.0
25-29	20,789	7.7	2,160,220	8.9
20-24	28,130	10.5	2,391,448	9.9
15-19	35,257	13.1	2,439,303	10.0
10-14	37,758	14.1	2,040,755	8.4
05-09	36,988	13.8	1,833,013	7.6
00-4	34,735	12.9	1,781,850	7.3
Totals	268,371	100.0	24,276,926	100.0

Population Distribution 1993

*First Nations Population Included in Medical Services Branch Data
and Total Canadian Population*

Age Group	First Nations 1993		Canadian 1993	
	Population	Percent	Population	Percent
80+	3,640	0.8	730,021	2.5
75-79	2,757	0.6	641,408	2.2
70-74	4,244	1.0	915,014	3.2
65-69	5,924	1.3	1,102,679	3.8
60-64	8,105	1.8	1,213,038	4.2
55-59	10,405	2.4	1,245,491	4.3
50-54	13,194	3.0	1,460,438	5.0
45-49	17,452	4.0	1,899,641	6.6
40-44	22,527	5.1	2,204,221	7.6
35-39	30,465	6.9	2,498,522	8.6
30-34	39,047	8.9	2,676,308	9.2
25-29	42,576	9.7	2,394,226	8.3
20-24	43,431	9.9	2,088,574	7.2
15-19	42,925	9.7	1,945,118	6.7
10-14	46,529	10.6	1,963,623	6.8
05-09	52,454	11.9	1,966,275	6.8
0-04	54,946	12.5	2,002,390	6.9
Totals	440,621	100.0	28,946,987	100.0

The population used for the First Nations age-distribution is described in Table 1.1
Sources: Medical Services Branch in-house statistics and Statistics Canada

Population Distribution by Region

First Nations Population Included in Medical Services Branch Data 1979 and 1993

Region	1979 Population	Percent	1993 Population	Percent
Yukon	2,619	1.0	6,880	1.6
Atlantic	8,653	3.3	13,919	3.2
Quebec	16,607	6.4	19,262	4.4
Ontario	46,061	17.7	63,308	14.4
Alberta	37,055	14.3	68,872	15.6
Manitoba	45,780	17.6	85,605	19.4
Saskatchewan	47,208	18.2	86,890	19.7
Pacific	55,946	21.5	95,885	21.8
Totals	268,371	100.0	440,621	100.0

The population used for the First Nations distribution is described in Table 1.1
Source: Medical Services Branch in-house statistics

Population Distribution by Gender

First Nations Population Served by Medical Services Branch 1993

Age Group	Female Population	Percent	Male Population	Percent
80+	2,029	0.5	1,611	0.4
75-79	1,511	0.3	1,246	0.3
70-74	2,339	0.5	1,905	0.4
65-69	3,155	0.7	2,769	0.6
60-64	4,218	1.0	3,887	0.9
55-59	5,532	1.3	4,873	1.1
50-54	6,996	1.6	6,198	1.4
45-49	9,131	2.1	8,321	1.9
40-44	11,849	2.7	10,678	2.4
35-39	15,946	3.6	14,519	3.3
30-34	20,250	4.6	18,797	4.3
25-29	21,396	4.9	21,180	4.8
20-24	21,597	4.9	21,834	5.0
15-19	21,189	4.8	21,736	4.9
10-14	22,749	5.2	23,780	5.4
05-09	25,453	5.8	27,001	6.1
0-04	26,669	6.1	28,277	6.4
Totals	222,009	50.4	218,612	49.6

The population used for the First Nations age-distribution is described in Table 1.1
Source: Medical Services Branch in-house statistics

Appendix 4

Crude and Age-standardized Mortality Rates* – Three-year Averages By Region, First Nations 1979-1993

ATLANTIC	Female		Male	
	Crude	Age Standardized	Crude	Age Standardized
79-81	6.0	12.5	9.5	14.6
82-84	5.2	10.7	7.0	11.6
85-87	5.9	14.4	7.4	12.3
88-90	5.7	14.0	7.8	15.0
91-93	4.7	11.5	7.7	14.7

QUEBEC	Female		Male	
	Crude	Age Standardized	Crude	Age Standardized
79-81	4.6	9.0	7.7	11.5
82-84	4.2	8.9	7.7	12.3
85-87	3.9	7.3	6.5	9.7
88-90	2.9	5.1	5.4	8.3
91-93	4.8	9.5	7.4	11.8

ONTARIO	Female		Male	
	Crude	Age Standardized	Crude	Age Standardized
79-81	5.3	9.7	8.1	11.4
82-84	5.1	9.6	7.8	11.4
85-87	5.3	8.9	9.2	13.0
88-90	5.1	9.7	7.6	11.6
91-93	5.1	8.9	7.7	10.9

MANITOBA	Female		Male	
	Crude	Age Standardized	Crude	Age Standardized
79-81	4.5	10.8	6.9	11.3
82-84	3.6	8.6	6.0	10.4
85-87	3.8	8.7	5.8	10.4
88-90	4.1	9.0	5.3	9.0
91-93	3.6	8.1	5.1	9.4

SASKATCH.	Female		Male	
	Crude	Age Standardized	Crude	Age Standardized
79-81	4.6	10.9	6.7	10.9
82-84	3.6	9.6	6.4	11.6
85-87	3.8	10.0	5.7	10.8
88-90	3.0	7.6	4.6	9.5
91-93	3.3	7.9	4.8	9.6

ALBERTA	Female		Male	
	Crude	Age Standardized	Crude	Age Standardized
79-81	6.1	13.1	9.2	15.8
82-84	4.8	11.2	8.1	14.2
85-87	4.8	10.3	7.0	11.3
88-90	4.2	9.5	6.5	11.5
91-93	4.2	9.5	6.1	11.2

PACIFIC	Female		Male	
	Crude	Age Standardized	Crude	Age Standardized
79-81	5.9	12.1	9.3	13.9
82-84	4.3	8.6	7.5	12.1
1987**	4.6	9.8	6.9	10.5
88-90	5.4	10.7	8.0	13.6
91-93	6.3	13.3	9.1	15.9

YUKON	Female		Male	
	Crude	Age Standardized	Crude	Age Standardized
79-81	7.9	11.5	12.0	15.3
82-84	4.5	7.8	8.3	11.3
85-87	4.7	7.7	8.6	13.9
88-90	3.6	5.7	7.2	11.2
91-93	4.7	8.6	5.4	9.0

** Annual data on mortality is not available for Pacific Region for 1985-86

* Deaths per 1,000 population, First Nations rates are age-standardized to the 1991 Canadian Population
Source: Medical Services Branch in-house statistics

Appendix 5

Stillbirths, Perinatal, Neonatal, Post-neonatal and Infant Mortality Rates*

Three-year Averages 1979-1993,

First Nations by Region

ATLANTIC	Stillbirths	Perinatal	Neonatal	Post-Neonatal	Infant Mortality
79-81	20.6	22.0	3.0	3.0	6.0
82-84	13.3	21.2	10.7	5.4	16.1
85-87	15.9	24.4	9.7	7.5	17.2
88-90	4.7	5.7	6.7	8.6	15.2
91-93	7.3	8.3	2.8	6.5	9.2

QUEBEC	Stillbirths	Perinatal	Neonatal	Post-Neonatal	Infant Mortality
79-81	11.1	17.5	6.4	8.0	14.5
82-84	6.7	9.2	3.4	15.9	19.3
85-87	8.8	13.2	6.7	3.7	10.3
88-90	5.7	9.3	4.3	5.0	9.4
91-93	8.4	10.1	3.4	5.7	9.1

ONTARIO	Stillbirths	Perinatal	Neonatal	Post-Neonatal	Infant Mortality
79-81	16.8	21.4	7.8	15.4	23.2
82-84	15.6	20.0	6.8	11.0	17.8
85-87	16.3	18.2	7.4	11.6	19.0
88-90	10.4	13.6	4.3	5.5	9.8
91-93	10.6	16.8	9.1	6.0	15.1

MANITOBA	Stillbirths	Perinatal	Neonatal	Post-Neonatal	Infant Mortality
79-81	11.2	20.1	12.0	10.2	22.2
82-84	8.8	13.8	7.2	6.8	13.9
85-87	10.4	16.3	7.1	5.6	12.7
88-90	9.5	12.8	4.4	4.9	9.3
91-93	8.3	12.1	4.6	4.2	8.7

SASK.	Stillbirths	Perinatal	Neonatal	Post-Neonatal	Infant Mortality
79-81	12.1	21.7	11.7	16.3	28.1
82-84	12.4	15.8	5.1	10.2	15.3
85-87	9.4	14.7	6.8	8.4	15.2
88-90	7.4	9.7	3.5	7.1	10.6
91-93	8.7	12.5	4.8	9.4	14.1

ALBERTA	Stillbirths	Perinatal	Neonatal	Post-Neonatal	Infant Mortality
79-81	7.5	14.9	9.3	13.0	22.3
82-84	11.4	15.3	7.3	12.7	20.0
85-87	16.4	20.8	6.9	12.8	19.6
88-90	11.7	16.7	5.7	9.1	14.8
91-93	14.6	17.3	5.0	9.2	14.2

PACIFIC	Stillbirths	Perinatal	Neonatal	Post-Neonatal	Infant Mortality
79-81	10.4	25.1	17.5	15.7	33.2
82-84	11.4	16.6	6.6	15.2	21.8
1987**	9.7	15.4	5.7	9.4	15.2
88-90	10.1	14.5	4.4	10.1	14.5
91-93	9.1	12.1	2.9	8.4	11.3

YUKON	Stillbirths	Perinatal	Neonatal	Post-Neonatal	Infant Mortality
79-81	15.3	20.4	5.2	25.9	31.1
82-84	0.0	0.0	17.9	0.0	17.9
85-87	9.4	9.4	0.0	14.3	14.3
88-90	0.0	0.0	0.0	3.0	3.0
91-93	0.0	3.0	3.0	0.0	3.0

** Annual data on mortality is not available for Pacific Region for 1985-86

* Stillbirths and perinatal – deaths per 1,000 total births; neonatal, post-neonatal and infant mortality – deaths per 1,000 live births
Sources: Medical Services Branch in-house statistics and Statistics Canada

Appendix 6

International Classification of Disease Chapter Description

ICD CHAPTER	DESCRIPTION	ABBREVIATION*
1	Infectious and parasitic diseases	Infectious and Parasitic
2	Neoplasms	Neoplasms
3	Endocrine, nutritional and metabolic diseases, and immunity disorders	Endocrine and Immune
4	Diseases of the blood and blood-forming organs	Blood Diseases
5	Mental disorders	Mental Disorders
6	Diseases of the nervous system and sense organs	Nervous System
7	Diseases of the circulatory system	Circulatory Diseases
8	Diseases of the respiratory system	Respiratory Diseases
9	Diseases of the digestive system	Digestive Diseases
10	Diseases of the genitourinary system	Genitourinary Diseases
11	Complications of pregnancy, childbirth, and the puerperium	Complications of Pregnancy
12	Diseases of the skin and subcutaneous tissue	Skin Diseases
13	Diseases of the musculoskeletal system and connective tissue	Musculoskeletal

14	Congenital anomalies	Congenital Anomalies
15	Certain conditions originating in the perinatal period	Perinatal Conditions
16	Symptoms, signs and ill-defined conditions	Symptoms and Ill-defined
17	Injury and poisoning	Injury and Poisoning

* Abbreviations used in the text

